

IBC — Fire Safety



cdpACCESS

2021 GROUP A PROPOSED CHANGES TO THE I-CODES

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Virtual Committee Action Hearings

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2021 GROUP A – PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE – FIRE SAFETY

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TENTATIVE ORDER OF DISCUSSION 2021 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE – FIRE SAFETY

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does not necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair. Note that some FS code change proposals may not be included on this list, as they are being heard by another committee.

Number Not Used

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 F60-21 Part II
 PM21-21

FS1-21

IBC: 703.2

Proponents: Bill McHugh, The McHugh Company, representing National Fireproofing Contractors Association (bill@mc-hugh.us)

2021 International Building Code

Revise as follows:

703.2 Fire resistance. *The fire-resistance rating of building elements, components or assemblies shall be determined in accordance with ASTM E119 or UL 263. Fire-resistance ratings shall also be determined in accordance Section 703.2.1 or 703.2.2 without the use of *automatic* sprinklers or any other fire suppression system being incorporated, or in accordance with Section 703.2.3.*

Reason Statement: During the 2021 IBC development process, the ASTM E119 and UL 263 standards were omitted from a major floor modification made during the hearings.

The charging language for this section has had ASTM E119 and UL 263 referenced since the inception of the IBC. Secondly, the definition of fire-resistance rating states, "*The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a structural function, or both, as determined by tests, or methods based on tests, prescribed in Section 703.*"

Note that the IBC Ch. 2 definition states, "*methods based on tests*", which is the basis for determining fire-resistance. The test referred to is ASTM E119 or UL 263. This code proposal provides direction to use the 100 years of fire-testing from which to build approvals for fire-resistance, regardless of method.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code proposal references the basis for developing fire-resistance used for over 100 years.

FS1-21

FS2-21

IBC: 703.2.1

Proponents: Bill McHugh, The McHugh Company, representing National Fireproofing Contractors Association (bill@mc-hugh.us)

2021 International Building Code

Revise as follows:

703.2.1 Tested assemblies. A *fire-resistance rating* of *building elements*, components or assemblies shall be determined by the test procedures set forth in ASTM E119 or UL 263 using loaded horizontal building elements and assemblies meeting the minimum size requirements in the standard. The *fire-resistance rating* of penetrations and *fire-resistant joint systems* shall be determined in accordance with Sections 714 and 715, respectively.

Reason Statement: Fire testing is very technical. The technical details about how fire tests are conducted are part of the standards; ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials* and UL 263 *Fire Tests of Building Construction and Materials*. The purpose of this code proposal is to bring clarity to code users about a key point that is in the standards, that is critical to building safety.

The key words from the standard in this proposal can help code officials evaluate compliance with the code during plan review and approval. These few words added to the code highlight a very important concept from ASTM E119 and UL 263 - applying a load to the horizontal building elements (beams) and also horizontal assemblies (floors or roofs) and also full scale testing rather than small scale testing.

We have heard from the field that products tested in accordance with a "*modified*" ASTM E119 or UL 263 fire test are being submitted and approved as code compliant, yet don't comply with the code. The "*modification*" to the fire-test standards are to remove the load applied and use a small sample size. This results in passing fire tests at less thickness, causing a safety risk. Removing the weight resistance - a load - during the fire test, and using a smaller sample size are violations of the ASTM E119 and UL 263 fire test standards.

If there is not a load applied and not using full scale testing as required by the ASTM E119 and UL 263 standards, we have no idea how the products will perform in the field. Adding the words - 'loaded horizontal building elements and assemblies meeting the minimum size requirements specified in the standards' - is short, and sets up the questions that the code official can ask to evaluate fire-resistance protection submitted during the approval process. In order to bring consistency to the code requirements, we have added it in each of the new sections added to the '21 code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal will deliver what the code requires to the building owner and manager.

FS2-21

FS3-21

IBC: 703.2.2, ASTM Chapter 35 (New)

Proponents: Marcelo Hirschler, GBH International, representing self (mmh@gbhint.com)

2021 International Building Code

Revise as follows:

703.2.2 Analytical methods. The fire resistance of *building elements*, components or assemblies established by an analytical method shall be by any of the methods listed in this section, based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263.

1. *Fire-resistance* designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated *building elements*, components or assemblies as prescribed in Section 721.
3. Calculations in accordance with Section 722.
4. Engineering analysis based on a comparison of *building element*, component or assemblies designs having *fire-resistance ratings* as determined by the test procedures set forth in ASTM E119 or UL 263.
5. *Fire-resistance* designs certified by an *approved* agency.
6. Fire resistance ratings obtained by extension of data from fire resistance tests conducted in accordance with ASTM E119 when using the principles contained in ASTM E2032.

Add new text as follows:

ASTM

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

E2032: Standard Guide for Extension of Data From Fire Resistance Tests Conducted in Accordance with ASTM E 119 (2009, reapproved 2017)

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM E2032 Standard Guide for Extension of Data From Fire Resistance Tests Conducted in Accordance with ASTM E 119 (2009, reapproved 2017), with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: ASTM E2032 provides a mandatory method to calculate a fire resistance rating by extension of the results of fire tests conducted in accordance with ASTM E119. This method has been in use for many years and should also be specifically referenced in the code.

1. Note that the methodology in ASTM E2032 is based on having conducted successful tests in accordance with ASTM E119. Furthermore, the methodology in the standard cannot be used for developing fire resistance ratings without having conducted such tests.
2. Note that ASTM E2032 (although labeled a "guide") is written in mandatory language and has been issued by a consensus standards organization (ASTM) and, thus, complies with CP 28.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal simply adds another option without deleting an existing option.

FS3-21

FS4-21

IBC: 703.2.2

Proponents: Bill McHugh, representing National Fireproofing Contractors Association (billmchugh-jr@att.net)

2021 International Building Code

Revise as follows:

703.2.2 Analytical methods. The fire resistance of *building elements*, components or assemblies established by an analytical method shall be by any of the methods listed in this section, based on the fire exposure and acceptance criteria with loaded horizontal building elements and assemblies specified in ASTM E119 or UL 263.

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

Reason Statement: ASTM E119 and UL 263 are very detailed standards with the purpose of determining fire-resistance-ratings for building elements and assemblies. Fire testing conducted in accordance with ASTM E119 and UL 263 is used to prove performance of building elements and assemblies protected with fire-resistive materials. The purpose of this code proposal is to clarify that when developing an analytical method for fire-resistance, ASTM E119 and UL 263 standards - without modifications and with load applied - are to be factored in the analysis. Determining fire-resistance-ratings needs to be performed without modifications to the stated standards to be consistent with 703.2.1, Tested Assemblies. These few words - with load applied to horizontal building elements and assemblies - give the code official the questions to ask when analytical methods are submitted for approval for fire-resistance-ratings of horizontal building elements and assemblies.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. If approved, this code proposal will assure that critical aspects of ASTM E119 and UL 263 are included in the analytical methods.

FS4-21

FS5-21

IBC: 703.2.3

Proponents: Bill McHugh, The McHugh Company, representing National Fireproofing Contractors Association (bill@mc-hugh.us)

2021 International Building Code

Revise as follows:

703.2.3 Approved alternate method. The *fire resistance of building elements*, components or assemblies not complying with Section 703.2.1 or 703.2.2 shall be permitted to be established by an alternative protection method based on a comparison of designs having fire-resistance ratings as determined by the test procedures as set forth in ASTM E119 or UL 263 and approved in accordance with Section 104.11.

Reason Statement: When providing an alternate method to determine fire resistance, there needs to be a justification for the claims made in the alternate method. To prove fire resistance of building elements and assemblies, the basis from which to draw conclusions needs to incorporate comparisons with ASTM E119 and UL 263. There are thousands of fire tests with multiple choices in each design from which to base alternate method approval in the UL Product iQ, Intertek and other fire-resistance directories providing ample opportunity to compare for alternate method development. The fire testing database has over 100 years of experience from which to draw conclusions.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal will not increase cost of construction. Instead, it will assure alternative methods use publicly available information to prove performance.

FS5-21

FS6-21

IBC: 703.2.3

Proponents: Bill McHugh, The McHugh Company, representing National Fireproofing Contractors Association (bill@mc-hugh.us)

2021 International Building Code

Revise as follows:

703.2.3 Approved alternate method. *The fire resistance of building elements*, components or assemblies not complying with Section 703.2.1 or 703.2.2 shall be permitted to be established by an alternative protection method in accordance with Section 104.11 or ASCE/SEI 7 Appendix E, performance-based structural fire design and comparing information based on testing in accordance with ASTM E119 or UL 263.

Reason Statement: The purpose of this proposal is to provide the AHJ a new additional standard basis from which to approve alternative methods for fire-resistance. In addition to section 104.11 of the IBC, the new ASCE/SEI 7 Appendix E, when used in combination with knowledge gained from 100 years of fire testing in accordance with ASTM E119 and UL 263, provides the code official a quantitative way - the data fire-resistance directories and test reports, to evaluate and approve an alternative method for fire-resistance ratings in buildings. When using a fire-resistance test report or directory, in addition to the performance based structural fire design analysis, we gain better fire safety in buildings through use of research and testing knowledge. Plus, this new ASCE/SEI 7 Appendix E provides a standard from which the code official can develop their approval of the alternate method.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal provides another option for the code official to use when approving an alternate method in accordance with 104.11.

FS6-21

FS7-21

IBC: 703.8 (New)

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

2021 International Building Code

Add new text as follows:

703.8 Sealing of adjacent fire resistance rated combustibile assemblies. In buildings of Types III, IV, and V construction, sealant or adhesive shall be provided to resist the passage of air in the following locations:

1. At abutting edges and intersections of different combustibile assemblies required to be fire-resistance rated.
2. At abutting edges and intersections of combustibile assemblies 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.

Exceptions:

1. Sealants or adhesives need not be provided where they are not a required component of a tested fire-resistance-rated assembly.
2. Sealants or adhesives need not be provided between different adjacent light frame assemblies of two hours or less when the finish materials are noncombustible and continuous between the two adjacent assemblies on no less than one side.

Reason Statement: Testing of abutting wood elements has shown wood members tightly fitted with a continuous edge across or through the assembly exhibit some air leakage when subjected to fires. Typically the heated volume of air in a compartment fire is more buoyant and at a higher pressure driving air leakage of hot gasses through unsealed cracks where different assemblies abut without continuous finish materials. The ad hoc committee on tall wood buildings proposed a requirement to seal abutting edges of panels which is now in IBC Section 703.7. As the hot gasses move through the crack the wood contracts as it chars making the opening more pronounced. Char rates along these interfaces occur at a higher rate.

In platform construction multiple joists can be attached together to provide continuity of vertical 2 hour fire barriers or fire walls. A rule of thumb in existence since the legacy code days was a 2x nominal joist (1.5 inch thickness) joist per hour of fire resistance will be compromised from the fire side so additional joists are provided for bearing in addition to the burned multiple joists. This roughly correlates with the 1.5 inches per hour of char in chapter 20 of the NDS. According to the scoping of the NDS, this 1.5 inches per hour is for structural fire resistance. Temperature rise is not an issue for sufficiently thick wood however ignition of cotton waste can be an issue if continuous edges where wood butts together is not sealed.

As in Section 703.7, if the specific intersection is tested without sealant then the sealant would not be needed.

When the fire resistant finish materials are continuous on one side or the other this continuity accomplishes the same outcome as sealant and is listed as an exception.

Cost Impact: The code change proposal will increase the cost of construction

Typically the sealant is only needed where walls require continuity and do not have continuous finishes so most cases do not require the addition of sealant in light frame construction covered with gypsum that is taped and sealed on one side or the other.

FS7-21

FS8-21

IBC: 704.1, 704.1.1 (New)

Proponents: Matthew Hunter, American Wood Council, representing American Wood Council (mhunter@awc.org)

2021 International Building Code

Revise as follows:

704.1 Requirements. The *fire-resistance ratings* of structural members and assemblies shall comply with this section and the requirements for the type of construction as specified in Table 601. ~~The *fire-resistance ratings* shall be not less than the ratings required for the fire-resistance-rated assemblies supported by the structural members.~~

~~**Exception:** *Fire barriers, fire partitions, smoke barriers and horizontal assemblies* as provided in Sections 707.5, 708.4, 709.4 and 711.2, respectively.~~

Add new text as follows:

704.1.1 Supporting construction. 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.

Exception: Structural members and assemblies that support *Fire barriers, fire partitions, smoke barriers and horizontal assemblies* as provided in Sections 707.5, 708.4, 709.4 and 711.2, respectively.

Reason Statement: This is an editorial clean-up to better describe the intent of the exception. There is no technical change. The current exception does not exempt fire barriers, fire partitions, smoke barriers and horizontal assemblies from requirements for type of construction, only the provision about supporting construction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The purpose of this code change is editorial in nature and is only proposed to clarify the intent of the Exception.

FS8-21

FS9-21

IBC: 704.2, 704.3, 704.4, 704.4.1, 704.4.2

Proponents: Shane Nilles, City of Cheney, WA, representing WABO (snilles@cityofcheney.org); Micah Chappell, representing Washington Association of Building Officials (micah.chappell@seattle.gov)

2021 International Building Code

Revise as follows:

704.2 Column protection. Where columns are required to have protection to achieve a *fire-resistance rating*, the entire column shall be provided individual encasement protection by protecting it on all sides for the full column height, including connections to other structural members, with materials having the required *fire-resistance rating*. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

Exception: Columns that meet the limitations of Section 704.4.1.

704.2 704.3 Protection of the primary structural frame other than columns. Members of the *primary structural frame* other than columns that are required to have protection to achieve a *fire-resistance rating* and support more than two floors or one floor and roof, or support a *load-bearing wall* or a *nonload-bearing wall* more than two stories high, shall be provided individual encasement protection by protecting them on all sides for the full length, including connections to other structural members, with materials having the required *fire-resistance rating*.

Exception-Exceptions: Individual encasement protection on all sides shall be permitted on all exposed sides provided that the extent of protection is in accordance with the required *fire-resistance rating*, as determined in Section 703.

1. Individual encasement protection is permitted to be interrupted where the primary structural member is in direct contact with another structural member.
2. Primary structural members other than columns that do not support more than two floors or one floor and roof, or a load-bearing wall or a nonload-bearing wall more than two stories high, are permitted to be protected by the membrane of a fire-resistance rated wall or horizontal assembly.
3. Members that are integral elements in walls of light-frame construction, including studs, columns, and boundary elements located entirely between the top and bottom plates or tracks, shall be permitted to be protected by the membrane of a fire-resistance rated wall assembly.

704.4 704.3 Protection of secondary structural members. *Secondary structural members* that are required to have protection to achieve a *fire-resistance rating* shall be protected by individual encasement protection, by the membrane of a fire-resistance rated wall or horizontal assembly, or a combination of both.

704.4.1 Light frame construction. ~~Studs, columns and boundary elements that are integral elements in walls of light-frame construction and are located entirely between the top and bottom plates or tracks shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the wall.~~

704.4.2 Horizontal assemblies. ~~Horizontal assemblies are permitted to be protected with a membrane or ceiling where the membrane or ceiling provides the required fire-resistance rating and is installed in accordance with Section 711.~~

Reason Statement: The current language is confusing and misleading. It does not follow regular code language structure that provides charging language, and exceptions thereto. It further divides the primary structural elements into two separate sections, columns and those other than columns, and it also mixes some secondary member language in with the primary structure section. This proposal restructures and consolidates into two sections, primary and secondary members, to have the charging language first and outlines the appropriate exceptions thereto. This will lead to more consistent application and safer buildings without increasing the stringency of the provisions.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. Proposal only restructures the code section language to be more understandable.

FS9-21

FS10-21

IBC: 704.4, 704.4.1

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 International Building Code

Revise as follows:

704.4 Protection of secondary structural members. *Secondary structural members* that are required to have protection to achieve a *fire-resistance rating* shall be protected by individual encasement protection or in accordance with Section 704.4.1 and 704.4.2.

704.4.1 Light-frame construction. Studs, columns and boundary elements that are integral assembly elements in *walls of light-frame construction* and are located entirely between the top and bottom plates or tracks shall be permitted to have required *fire-resistance ratings* provided by the membrane protection provided for the *wall*.

Reason Statement: The wording of Section 704.4 currently does not actually allow any protection measure for secondary structural members besides individual encasement protection and causes conflicts between sections, even though the intent is to allow 704.4.1 and 704.4.2 methods to achieve this protection. This proposal would clarify the wording to allow the intended methods.

The word *integral* in the context of *light-frame construction* is not specific. Is a 6x8 wood column in a 2x6 wood wall *integral*? Is a structural steel HSS column in a cold-formed steel *light-frame construction wall* *integral*? This proposal would clarify that the protection is only afforded to the elements that are in accordance with the fire-resistance rated assembly being utilized for the wall.

Cost Impact: The code change proposal will increase the cost of construction

This proposal is intending to clarify the code. As the existing wording is not specific enough, the impact on cost will vary in different jurisdictions based on how they interpret the provisions. It is possible that this will change interpretations such that more elements will require individual encasement protection.

FS10-21

FS11-21

IBC: 704.6.1

Proponents: Bill McHugh, representing National Fireproofing Contractors Association (billmchugh-jr@att.net)

2021 International Building Code

Revise as follows:

704.6.1 Secondary attachments to structural members. Where primary and secondary structural steel members require fire protection, secondary tubular steel attachments to those 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.

Reason Statement: We applaud the proponent that added this new section for fire-resistance-rated protection of secondary steel attachments to structural steel building elements. While we supported the original proposal that dealt with only tubular steel secondary attachments, we believe the approved Public Comment far exceeds the 2018/2019 Fire Safety Committee's Action to protect only tubular - substantial attachments - to the secondary structural frame. It extends the protection to ANY steel attachments to the primary and secondary structural frame of the building. The new code language means that thin hanger wire that holds up ceiling grid and other items such as 1/2" or less threaded rod that also holds up items above ceilings must be protected with fire-resistive materials of thickness equal to or greater than the attachments.

Experts in fire resistance testing from a major testing laboratory and suspended ceiling manufacturer have stated "heat transfer from hanger wires or small rods have never melted or caused failure of the secondary members to which they are attached. The wires and rods elongate during the fire test, but remain through the end of the fire-tests." These experts also state that in fire tests of assemblies where ceiling panels or gypsum panels are used, the wires and rods melt when the assembly eventually fails. These attachments are not substantial steel items that make a difference to the building fire safety - but are now are required to have 12" of protection.

To protect wires and rods for 12" means some kind of wire mesh cage must be fabricated around the wire or rod to allow the fireproofing thickness to build and provide required protection. This new requirement – that does extend to thin 12ga. hanger wire and small threaded rods – adds unjustified cost to the project without proof that it adds to safety.

Finally, there is no tested and listed system design in the UL Product iQ currently that requires 12" protection of threaded rods or ceiling hanger wire. That's why we request reverting back to the original proposal prior to the PCH last cycle, which refers to only tubular attachments that can cause problems on the structure.

Cost Impact: The code change proposal will decrease the cost of construction

The cost impact will be that the small attachments defined in the proposal will not require protection, reducing costs significantly. The amount of reduction varies based on the number of small attachments, the presence of a hanging ceiling with metal grid and ceiling tiles, or other building service items such as ducts, cables and pipes, that might hang from a fire-resistance-rated assembly. .

FS11-21

FS12-21

IBC: 705.2.3.1

Proponents: Stephen DiGiovanni, Clark County, representing Self (sdigiovanni@clarkcountynv.gov)

2021 International Building Code

Revise as follows:

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. 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.

Reason Statement: The Ad Hoc Committee for Tall Wood Buildings (TWB) was formed by the ICC Board of Directors in 2016 to explore the building science of tall wood buildings with the scope to investigate the feasibility of and take action on developing code changes. A total of 17 proposals were presented and approved in the Group A and Group B code cycles leading to the 2021 edition of the I-codes. Having provided the technical foundation for deploying tall wood buildings in the various codes, the Ad Hoc Committee for Tall Wood Buildings was sunset in 2020. Upon reflection of the codes, there appears to be at least one item that was not adequately addressed by the TWB. In particular, this proposal seeks to address the allowance of balconies and similar projections on Type IV buildings to be constructed of Type V construction.

A goal of the TWB code changes was to minimize exterior fire spread for Type IV buildings that were proposed for increased heights over what was previously permitted for traditional Type IV Heavy Timber construction. The committee took particular care in eliminating combustibles from the exterior walls for Types IV-A, IV-B, and IV-C construction, as evidenced by the language presented for IBC Section 602.4. The only combustibles permitted are mass timber elements, and a water barrier. Outboard of these materials, the proposals required non-combustible protection with a minimum rating of 40 minutes. The allowances in IBC 705.2.3.1 to allow Type V balconies and projection, exterior of and thus without the benefit of the non-combustible protection, are incongruent with the TWB code proposals in terms of the type of construction materials allowed and the lack of protection in place. While it can be argued that the specific language in Section 602.4 overrides the general exception in Section 705.2.3.1, still the apparent conflicting provisions would benefit from clarification. For this reason, the proposed fix is being offered. In adding the new construction types, the TWB took care to not affect the existing requirements for traditional Type IV Heavy Timber construction. Where the TWB found codes that were to be maintained for traditional Type IV construction, but were not applicable to the new Type IV-A, IV-B, and IV-C construction types, the committee proposed a change to add the -HT designator, to clarify the particular code requirement applied to Type IV-HT only.

Thus, in order to correct an apparent code conflict, to clarify the intent of the TWB, and to maintain consistency with the traditional Type IV Heavy Timber construction, the proposal simply seeks to add a "-HT" designator to the Type IV construction addressed in Exception 3, thus eliminating the perceived allowance of adding balconies and similar projections of Type V construction for new Types IV-A, IV-B and IV-C construction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

Cost impact is based on interpretation of the code conflict between IBC 602.4 and IBC 705.2.3.1. The author's interpretation is that Type V balconies are not currently permitted on Types IV-A, IV-B, and IV-C construction, and that this proposal only seeks to clarify the code's intent, and thus there is no cost impact.

FS12-21

FS14-21

IBC: 705.3

Proponents: Todd Snider, West Coast Code Consultants, representing Self (ToddS@WC-3.com)

2021 International Building Code

Revise as follows:

705.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection, projections and *roof-covering* requirements, buildings on the same lot shall be assumed to have an imaginary line between them. For determining wall protections the imaginary line shall extend vertically to a point 15 feet above the lower roof of the buildings which it separates. For opening protections the imaginary line shall terminate at the lower roof of the buildings which it separates. openings above the lower roof shall be protected in accordance with Section 706.8.5.

Where a new building is to be erected on the same lot as an *existing building*, the location of the assumed imaginary line with relation to the existing building shall be such that the *exterior wall* and opening protection of the *existing building* meet the criteria as set forth in Sections 705.5 and 705.8.

Exceptions:

1. Two or more buildings on the same lot shall be either regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.
2. Where an S-2 parking garage of Construction Type I or IIA is erected on the same lot as a Group R-2 building, and there is no *fire separation distance* between these buildings, then the adjoining *exterior walls* between the buildings are permitted to have occupant use openings in accordance with Section 706.8. However, opening protectives in such openings shall only be required in the *exterior wall* of the S-2 parking garage, not in the *exterior wall* openings in the R-2 building, and these opening protectives in the *exterior wall* of the S-2 parking garage shall be not less than 1¹/₂-hour *fire protection rating*.

Reason Statement: As currently written the imaginary line is not limited vertically so it can be assumed to continue indefinitely similar to a property line. As such an imaginary line between a 1 story building and an adjacent 10 story building on the same lot would require all stories of the 10 story building to be provided with fire protection from the imaginary line to the one story building. The current code language conflicts with the provisions of IBC 705.8.6 about opening protections for vertical exposure of building on the same lot. The intent of this change is to correlate these two sections to clarify the limit of fire protection and parapets similarly to what is done in 705.8.6 and to clarify that opening protections above the lower roof comply with 705.8.6.

It makes sense to fire rate the exterior wall and protect openings in the exterior wall for all levels of a building based on fire separation distance to a property line as there is no control over what can occur on the adjacent property. However, where buildings are on the same lot and have the same owner, it does not make sense to protect all levels of a taller building to account for future changes to adjoining lower structure. Fire protection should only extend as high as necessary for the proposed configuration, if changes are made in the future the new construction would need to comply at that time.

Cost Impact: The code change proposal will decrease the cost of construction

This code change should reduce the cost of construction for taller buildings as it eliminates requirements to fire rate the exterior wall and protect openings that are not really exposed to a fire hazard.

FS14-21

FS15-21

IBC: 705.3.1 (New)

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 International Building Code

Add new text as follows:

705.3.1 Buildings on adjacent lots. Two or more buildings on adjacent lots shall be permitted to be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction. For the code official's review and approval, he or she shall be provided with copies of contractual agreements from the owners of all properties involved that state that the owners recognize and accept the risks associated with considering all buildings to be portions of a single building.

Reason Statement: The 2018 edition of the IBC added a new exception 2 to section 706.1.1 that stated that party walls are not required on lot lines that divide a single building for ownership purposes provided that the code official is allowed to review and approve dedicated access easements and contractual agreements.

As noted in the code change proposal (FS27-15, which was submitted by the Fire Code Action Committee), "this proposal is intended to recognize that it is increasingly common to have property subdivided with a lot line dividing a building for ownership purposes."

The change to section 706.1.1 in the 2018 edition of the IBC addressed interior separation at property lines; this code change proposal addresses exterior walls at property lines.

For example, consider a building of type IA construction that has a base and two towers above it. If a property line separated the two towers and extended through the base, 706.1.1 would allow omission of a firewall along the property line in the common base, but opening protection may be required in the two towers above the base where they face the property line.

This proposal builds on the concept in 705.3 (exception) that states that an imaginary line is not required between two or more buildings on the same lot if the aggregate area of such buildings is within the limits in Chapter 5 for a single building.

Cost Impact: The code change proposal will decrease the cost of construction

This code change proposal would reduce the cost of construction because it would not be necessary to set-back certain building facades from an imaginary property line to maximize window area. Thus, land could be used more efficiently.

FS15-21

FS16-21

IBC: TABLE 705.5

Proponents: Eric Bressman, representing Ankrom Moisan Architects (ericb@ankrommoisan.com)

2021 International Building Code

Revise as follows:

**TABLE 705.5
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE^{a, d, g}**

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H ^e	OCCUPANCY GROUP F- 1, M, S-1 ^f	OCCUPANCY GROUP A, B, E, F-2, I, R ⁱ , S-2, U ^h
X < 5 ^b	All	3	2	1
5 ≤ X < 10	IA, IVA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB, IVA, IVB	2	1	1 ^c
	IIB, VB	1	0	0
	Others	1	1	1 ^c
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

- a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.
- b. See Section 706.1.1 for party walls.
- c. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.
- d. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.
- e. For special requirements for Group H occupancies, see Section 415.6.
- f. For special requirements for Group S aircraft hangars, see Section 412.3.1.
- g. Where ~~Table 705.8~~ Section 705.8.1 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.
- h. For a building containing only a Group U occupancy private garage or carport, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater.
- i. For a Group R-3 building of Type II-B or Type V-B construction, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater.

Reason Statement: The current language in the footnote refers to the table and not the charging language that sends you to the table. By structuring the reference in this manner, the two exceptions in the charging language are excluded. These two exceptions allow for 100% unprotected openings. It stands to reason that if the entire wall can be unprotected openings, then any solid portion of the wall should not require a fire rating. The footnote should tie to the charging language of the Section and not the table. While the 2nd exception is already accounted for in the body of Table 602 (Types IIB and VB construction), the current language does not capture the first exception for ground floor storefronts with the prescribed *fire separation distance* or unoccupied space. This results in a situation where a designer can have a wall with 100% unprotected openings per this exception, but if any part of the wall is not an opening it is required to be rated per Table 705.5.

Cost Impact: The code change proposal will decrease the cost of construction
There is potential for a small cost savings for projects not required to rate the ground floor walls due to the added exception.

FS17-21

IBC: 705.5.1 (New)

Proponents: Daniel Nichols, representing Metropolitan Transportation Authority, Construction and Development (dnichols@mnr.org)

2021 International Building Code

Add new text as follows:

705.5.1 Buildings in the Public Way. Exterior walls on buildings within the public way shall be rated as required for fire separation distance in Table 705.5, with the measurement method being modified to measure the distance between the face of the building and:

1. The face of a building on an adjacent lot
2. A property line
3. Another building within the public way

Exception: Group U occupancies

Reason Statement: "Fire Separation Distance" has a defined legacy in the model codes; taking into account distance to a "neighboring lot" (interior lot line), buildings across the street, and a public piece of land called the "public way". The public way has traditionally been considered public land or legal open space- an area where the risk of fire from another building was not considered.

However, the challenge of building transportation infrastructure is that construction happens in the public way, negating the safety that was assumed by the codes that were in place when existing buildings were constructed. This assumption, coupled with limited direction on how to handle such situations, is the basis for this code change.

The substantiation of the code change is to set the measurement so the fire exposure is the same as to an interior lot line, with no credit given to the existing building for fire resistance. The measure to a building on an adjacent lot recognizes the challenges of determining actual property boundaries on street fronts.

Group U buildings are exempt from these requirements due to their utility nature that are sometimes on place to actually maintain a boundary, like a fence or retaining wall.

The language in the code change is to utilize the same methodology as fire separation distance measurement, but not to be called a fire separation distance since it doesn't meet the definition of such in Chapter 2. the modified reference of Table 705.5 is to maintain uniformity in application.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal addresses a topic not currently regulated by the IBC.

FS17-21

FS18-21

IBC: 705.6 (New), 705.6

Proponents: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com)

2021 International Building Code

Add new text 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 or roof sheathing, deck or slab above.
2. The underside of a one-hour fire-resistance rated floor/ceiling or roof/ceiling assembly.

Parapets shall be provided as required by Section 705.11.

Revise as follows:

705.6-705.7 Structural stability. ~~Exterior walls shall extend to the height required by Section 705.11.~~ Interior structural elements that brace the *exterior wall* but that are not located within the plane of the *exterior wall* shall have the minimum *fire-resistance rating* required in Table 601 for that structural element. Structural elements that brace the *exterior wall* but are located outside of the *exterior wall* or within the plane of the *exterior wall* shall have the minimum *fire-resistance rating* required in Table 601 and Table 705.5 for the *exterior wall*.

Reason Statement: This is the same proposal that was brought forth last code cycle, FS-19. Steve pointed out a problem with the code in the continuity of exterior wall ratings. While his proposal may have been too simplistic, it really does provide the needed clarification on how to address the continuity of the required exterior wall rating. This is a huge issue in Type III construction where there is little direction on how the supporting construction for the exterior walls are to be rated, especially in the case of a parapet. FS-20 of the same code cycle got into too many specific requirements but attempted to address the same concern.

Cost Impact: The code change proposal will decrease the cost of construction

I like the Steve Thomas's reason statement from last cycle - this will reduce the cost because confusion will be eliminated and people won't be making things up.

In all seriousness, this could reduce the cost of construction as it will clearly define how exterior wall continuity is to be provided.

FS18-21

FS19-21

IBC: 705.6.1 (New), 705.6.1.1 (New)

Proponents: David Tyree, representing AWC (dtyree@awc.org); Paul Coats, representing American Wood Council (pcoats@awc.org)

2021 International Building Code

Add new text as follows:

705.6.1 Supporting construction. Construction that supports gravity loads from fire-resistance-rated exterior walls shall have a fire-resistance rating that is equal to or greater than the required fire resistance rating of the supported wall. For achieving the required fire resistance rating for exposure from the interior of the building, ceiling materials shall be permitted to contribute to the required fire-resistance of the supporting construction.

705.6.1.1 Materials. The material requirements of floor/ceiling assemblies shall be in accordance with requirements for interior building elements for the Type of Construction, including portions of the floor/ceiling construction that support gravity loads from an exterior wall.

Reason Statement: There is increasing controversy about the requirements for loadbearing exterior walls in Type III construction when floors intersect the exterior wall in typical “platform” framing. Driving this are overlapping concerns for maintaining the fire resistance of the exterior wall at the intersection with the floor, as well as material requirements for the floor structure, given that the wall itself is required to be fire-retardant treated wood if wood framing is used.

Platform framing can be accomplished without compromising the fire resistance of the exterior wall. When an unrated or one-hour fire-resistance rated floor intersects and supports the two-hour exterior wall at each floor level, the code requires the construction supporting the wall to have the same fire-resistance rating as the supported wall. This can be accomplished by several means, such as providing extra rim board members or blocking, and extra protection for the floor elements at the intersection. AWC’s 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. One example of these details (there are four details in DCA 3) is shown below this reason statement.

Maintaining the fire resistance of supporting construction plays a much more important role in the performance of the wall than the use of fire-retardant treated wood in the supporting floor. There is no demonstrated increase in fire-resistance rating for fire-retardant-treated wood when compared to untreated wood. Fire-retardant treated wood exhibits reduced flame spread, but it does not increase the fire-resistance rating of the assembly. In other words, requiring the end of the floor to be fire-retardant treated does not increase the fire-resistance of the wall. The code does not require elements of the floor to be fire-retardant treated even if they serve to support the gravity loads from the wall above. However, it does require those supporting floor elements to provide fire resistance equal to that required for the wall.

The current code language is subject to multiple interpretations, including requiring the floor elements to be fire-retardant-treated or prohibiting platform details altogether. These interpretations are costly and do not serve to increase safety. Often, they may jeopardize the fire performance of the floor for the sake of protecting the wall. The proposed subsections will clarify the issues, encouraging a practical and effective approach without compromising fire resistance or safety.

[Below page 7 from DCA 3 here: Figure 1B example detail and accompanying “methodology” notes]

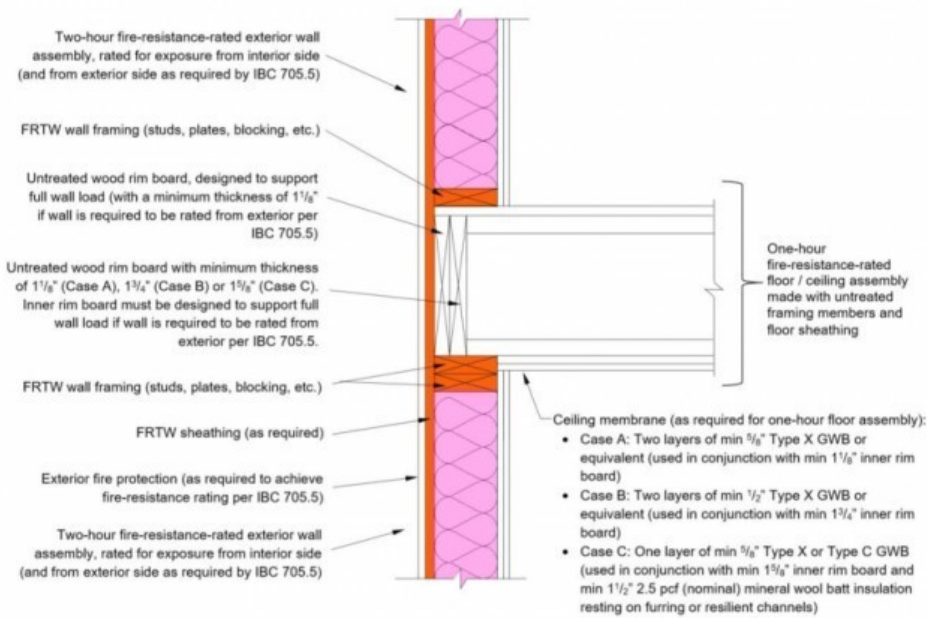


Figure 1B: Example detail for Type III-A exterior wall-floor intersection with two rim boards

Methodology:

Fire-resistance for exposure from interior side:

- Case A: Minimum 1⁵/₈-inch-thick inner rim board plus two layers of minimum 5⁵/₈ in. Type X GWB in the ceiling membrane provides 2 hours of protection to the outer rim board, based on the NDS-calculated time for the char depth to reach the inner rim board / outer rim board interface plus 40 minutes for each layer of 5⁵/₈ in. Type X GWB (per IBC Table 722.6.2(1)).
- Case B: Minimum 1³/₄-inch-thick inner rim board plus two layers of minimum 1¹/₂ in. Type X GWB in the ceiling membrane provides 2 hours of protection to the outer rim board, based on the NDS-calculated time for the char depth to reach the inner rim board / outer rim board interface plus 25 minutes for each layer of 1¹/₂ in. Type X GWB (per IBC Table 722.6.2(1)).
- Case C: Minimum 1⁵/₈-inch-thick inner rim board plus one layer of minimum 5⁵/₈ in. Type X GWB in the ceiling membrane plus minimum 1¹/₂-inch-thick, 2.5 pcf (nominal) mineral wool batt insulation provides 2 hours of protection to the outer rim board, based on the NDS-calculated time for the char depth to reach the inner rim board / outer rim board interface, plus 40 minutes for the 5⁵/₈ in. Type X GWB (per IBC Table 722.6.2(1)), plus 15 minutes for the mineral wool batt insulation.

The outer rim board must be designed to support the load from the wall above.

Fire-resistance for exposure from exterior side (where required per IBC Section 705.5): A combination of exterior fire protection, FRTW sheathing, and minimum 1¹/₈-inch-thick outer rim board is used to provide two hours of protection to the inner rim board. Layers to the exterior of the outer rim board (e.g., exterior fire protection, FRTW sheathing, etc.) must be sufficient to provide at least 80 minutes of protection to the outer rim board. The inner rim board must be designed to support the load from the wall above.

Note: NDS[®] is the 2018 National Design Specification[®] for Wood Construction

Bibliography: AWC Design for Code Acceptance (DCA) 3 - Fire-Resistance-Rated Wood-Frame Wall and Floor/Ceiling Assemblies can be downloaded at <https://awc.org/codes-standards/publications/dca3>

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This code change only clarifies the intent of this section for more uniform and consistent application. It may decrease costs in some jurisdictions depending on interpretation and application of the current code language.

FS20-21

IBC: 705.7 (New)

Proponents: Jay Hyde, representing Sacramento Valley Association of Building Officials (jhyde@mogaveroarchitects.com)

2021 International Building Code

Add new text as follows:

705.7 Vertical continuity. Exterior walls shall extend in a continuous vertical plane from the foundation or horizontal building separation conformance with Section 510 to the top of the parapet, underside of roof sheathing, horizontal projection of the roof above or horizontal building separation above.

Exception: At building offsets, exterior walls shall extend from the top or underside of building offsets.

Reason Statement: The definition "[BF] EXTERIOR WALL. A wall, load-bearing or nonload-bearing, that is used as an enclosing wall for a building, other than a fire wall, and that has a slope of 60 degrees (1.05 rad.) or greater with the horizontal plane." does not indicate if a multi-story building element used to enclose a building is a single exterior wall or a series of single-story exterior walls stacked one-on-top of the other. Recent ICC Staff interpretations appear to indicate that a multi-story enclosing element is a single exterior wall, not a series of walls stacked one on top of another. Proposed code change clarifies and codifies the ICC Staff interpretation.

Occasionally a local Building Official interprets a wood-framed nonload-bearing exterior wall as a series of one-story walls stacked one-on-top of another creating load bearing walls. This is an important consideration in Type IIIA buildings where a load bearing wall is required by Table 601 to have a 2-hour fire-resistance-rating but a nonload-bearing exterior wall is required to have a 1-hour fire-resistance-rating by Table 602.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposed code change clarifies Staff interpretations and should not increase or decrease the cost of construction. As noted in the reasoning statement, there may be some savings on individual buildings where Code Officials have interpreted an exterior wall as a series of one-story walls stacked one on top of another resulting in a non bearing exterior wall being interpreted as a load-bearing exterior wall due to the weight of one wall above on the walls below.

FS20-21

FS21-21

IBC: TABLE 705.8

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

2021 International Building Code

Revise as follows:

**TABLE 705.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION**

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA^a
0 to less than 3 ^{b, c, k}	Unprotected, Nonsprinklered (UP, NS)	Not Permitted ^k
	Unprotected, Sprinklered (UP, S) ⁱ	Not Permitted ^k
	Protected (P)	Not Permitted ^k
3 to less than 5 ^{d, e}	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S) ⁱ	15%
	Protected (P)	15%
5 to less than 10 ^{e, f, j}	Unprotected, Nonsprinklered (UP, NS)	10% ^h
	Unprotected, Sprinklered (UP, S) ⁱ	25%
	Protected (P)	25%
10 to less than 15 ^{e, f, g, j}	Unprotected, Nonsprinklered (UP, NS)	15% ^h
	Unprotected, Sprinklered (UP, S) ⁱ	45%
	Protected (P)	45%
15 to less than 20 ^{f, g, j}	Unprotected, Nonsprinklered (UP, NS)	25%
	Unprotected, Sprinklered (UP, S) ⁱ	75%
	Protected (P)	75%
20 to less than 25 ^{f, g, j}	Unprotected, Nonsprinklered (UP, NS)	45%
	Unprotected, Sprinklered (UP, S) ⁱ	No Limit
	Protected (P)	No Limit
25 to less than 30 ^{f, g, j}	Unprotected, Nonsprinklered (UP, NS)	70%
	Unprotected, Sprinklered (UP, S) ⁱ	No Limit
	Protected (P)	No Limit
30 or greater	Unprotected, Nonsprinklered (UP, NS)	No Limit
	Unprotected, Sprinklered (UP, S) ⁱ	No Limit
	Protected (P)	No Limit

For SI: 1 foot = 304.8 mm.

UP, NS = Unprotected openings in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

UP, S = Unprotected openings in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

P = Openings protected with an opening protective assembly in accordance with Section 705.8.2.

- a. Values indicated are the percentage of the area of the exterior wall, per story.
- b. For the requirements for fire walls of buildings with differing heights, see Section 706.6.1.
- c. For openings in a fire wall for buildings on the same lot, see Section 706.8.
- d. The maximum percentage of unprotected and protected openings shall be 25 percent for Group R-3 occupancies.
- e. Unprotected openings shall not be permitted for openings with a fire separation distance of less than 15 feet for Group H-2 and H-3 occupancies.
- f. The area of unprotected and protected openings shall not be limited for Group R-3 occupancies, with a fire separation distance of 5 feet or greater.
- g. The area of openings in an ~~open parking structure~~ *open parking garage* that complies with Section 406.5 with a fire separation distance of 10 feet or greater shall not be limited.
- h. Includes buildings accessory to Group R-3.
- i. Not applicable to Group H-1, H-2 and H-3 occupancies.
- j. The area of openings in a building containing only a Group U occupancy private garage or carport with a fire separation distance of 5 feet or greater shall not be limited.

k. For openings between S-2 parking garage and Group R-2 building, see Section 705.3, Exception 2.

Reason Statement: Footnote "g" allows an open parking structure to have unlimited openings where the fire separation distance is 10 feet or greater, but "open parking structure" is not defined and is up for interpretation - this proposal clarifies exactly what requirements must be met to allow unlimited openings. It is believed the intent is that this footnote is for open parking garages that comply with the special requirements in Chapter 4 for open parking garages. To clarify intent, this proposal revises "open parking structure" to defined term "*open parking garage*" and requires compliance with section 406.5 to use this footnote.

It should be noted that it is necessary to require compliance with 406.5 in addition to using the defined term since the defined term doesn't include all of the requirements in 406.5. For example, 406.5.1 requires Type I, II or V construction, but this isn't mentioned in the definition.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is a clarification that will not change the cost of construction.

FS21-21

FS22-21

IBC: 705.8.5, ASTM Chapter 35 (New)

Proponents: Tony Crimi, representing North American Insulation Manufacturers Association (NAIMA), representing representing North American Insulation Manufacturers Association (NAIMA)

2021 International Building Code

Revise as follows:

705.8.5 Vertical separation of openings. Openings in *exterior walls* in adjacent *stories* shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower *story* is not a protected opening with a *fire protection rating* of not less than $\frac{3}{4}$ hour. Such openings shall be separated vertically not less than 3 feet (914 mm) by spandrel girders, *exterior walls* or other similar assemblies that have a *fire-resistance rating* of not less than 1 hour, rated for exposure to fire from both sides, or by flame barriers that extend horizontally not less than 30 inches (762 mm) beyond the *exterior wall*. Flame barriers shall have a *fire-resistance rating* of not less than 1 hour. The unexposed surface temperature limitations specified in ASTM E119 or UL 263 shall not apply to the flame barriers unless otherwise required by the provisions of this code.

Exceptions:

1. This section shall not apply to buildings that are three *stories* or less above *grade plane*.
2. This section shall not apply to buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
3. *Open parking garages*.
4. Openings separated by spandrel-panel assemblies complying with ASTM E2874 and installed as tested.

Add new standard(s) as follows:

ASTM

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

ASTM E2874-19: Standard Test Method for Determining the Fire-Test Response Characteristics of a Building Spandrel-Panel Assembly Due to External Spread of Fire

Reason Statement: This proposal provides an additional option for vertical separation of openings based on testing to ASTM E2874-19. This new test Standard provides a performance based evaluation of that portion of an exterior wall that is installed between vertically adjacent openings between two adjacent stories (i.e. the spandrel-panel assembly). A building spandrel-panel assembly includes the exterior wall spandrel-panel assembly and any glazing.

This test method provides a performance based evaluation of the ability of a particular configuration and spandrel-panel assembly to impede the spread of fire to the interior of the room or the story immediately above it via fire spread from the exterior of a building. This test method is simulates a post flashover compartment fire venting through an opening, onto the exterior surface of a spandrel-panel assembly.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal introduces a new option, which can provide greater architectural flexibility in facade design.

FS22-21

FS23-21

IBC: 705.11 (New), 714.4, 714.4.4 (New)

Proponents: Tony Crimi, A.C. Consulting Solutions Inc., representing International Firestop Council

2021 International Building Code

Add new text as follows:

705.11 Penetrations. Penetrations into or through exterior walls required to have a fire-resistance rating shall comply with Section 714. Penetrations by ducts and air transfer openings shall comply with Section 705.10.

Exception: Penetrations in exterior walls that are permitted to have unprotected openings do not require protection of penetrations.

Revise as follows:

714.4 Fire-resistance-rated walls. Penetrations into or through exterior walls, fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.4.1 through 714.4.3 ~~4~~. Penetrations in *smoke barrier* walls shall also comply with Section 714.5.4.

Add new text as follows:

714.4.4 Penetrations in exterior walls. Walls that are permitted to have unprotected openings in accordance with 705.8 do not require protection of penetrations.

Reason Statement: This proposal adds a requirement to protect penetrations where a fire-resistance rated exterior wall is not allowed to have any other unprotected openings. The language here mirrors the existing requirements to protect joints, openings, and duct and air transfer openings in exterior walls. Although this is for very limited situations, in those cases where it applies, it is critical to also protect penetrations. Currently, the IBC does not limit the size, type, or number of unprotected penetrations through exterior walls, even when no other unprotected elements are allowed, including windows, doors, joints and vents. Fires can spread through unprotected penetrations just as easily as through other unprotected elements. If an exterior wall does not allow unprotected openings, it is because the building is close to a property line. This need for defined limiting distances is well established in the IBC.

By comparison, IBC 705.9 states:

705.9 Joints. *Joints* made in or between *exterior walls* required by this section to have a *fire-resistance rating* shall comply with Section 715.

Exception: *Joints in exterior walls* that are permitted to have unprotected openings.

Cost Impact: The code change proposal will increase the cost of construction

This code change proposal will increase the cost of construction, but only for fire resistance rated exterior walls that are not otherwise permitted to have unprotected openings.

FS23-21

FS24-21

IBC: 705.12 (New), 714.4

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 International Building Code

Add new text as follows:

705.12 Penetrations. Penetrations made in exterior walls required by this section to have a fire-resistance rating shall comply with Section 714.

Exception: Penetrations in exterior walls do not need to comply with Section 714 where unprotected openings are allowed in accordance with Section 705.8 and the penetrations contribute their area to the area of unprotected openings.

Revise as follows:

714.4 Fire-resistance-rated walls. Penetrations into or through exterior walls, fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.4.1 through 714.4.3. Penetrations in smoke barrier walls shall also comply with Section 714.5.4.

Exception: Penetrations into or through exterior walls do not need to comply with this section where unprotected openings are allowed in accordance with Section 705.8 and the penetrations contribute their area to the area of unprotected openings.

Reason Statement: Openings, Joints, and dusts and air transfer openings are regulated in exterior walls.

The inclusion of the protection of penetrations in exterior walls with small fire separation distances will complete the thought process of protecting these exterior walls that protect from fire spread between buildings.

It is extremely odd that joints currently require protecting, but penetrations do not.

This change will have the beneficial secondary effect of helping the detailing issues that occur regarding type III construction, where only exterior walls assemblies are allowed to have fire retardant treated wood. This protection of penetrations provision will open up the detailing possibilities for this difficult to discern type III with fire retardant treated wood issue.

Cost Impact: The code change proposal will increase the cost of construction

This provision, although not a change in code intent, would specifically require penetration protection where it was previously not required to be protected.

FS24-21

FS25-21

IBC: 706.2, 706.3 (New), 706.5 (New), TABLE 706.5 (New)

Proponents: sarah rice, The Preview Group. Inc., representing The Preview Group (srice@preview-group.com)

2021 International Building Code

Revise as follows:

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. ~~*Fire walls* designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.~~

Exception: In *Seismic Design Categories* D through F, where double *fire walls* are used in accordance with NFPA 221, floor and roof sheathing not exceeding $\frac{3}{4}$ inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction*.

Add new text as follows:

706.3 Double Fire Walls. Back to back walls designed and constructed in accordance with NFPA 221 shall be deemed to be fire walls and shall comply with this section.

706.5 Double Fire Wall Fire-resistance. Each wall of a double fire wall assembly shall have a minimum fire-resistance rating as specified in Table 706.5.

TABLE 706.5
DOUBLE FIRE WALL FIRE-RESISTANCE

Fire resistance of a double fire wall assembly (hours)	Minimum fire resistance of each wall in a double fire wall assembly (hours)
<u>4</u>	<u>3</u>
<u>3</u>	<u>2</u>
<u>2</u>	<u>1</u>

Reason Statement: Currently the IBC relies on the reference to NFPA 45 for the constructability details for a double fire wall, including the means by which a fire-resistance rating is assigned to a double fire wall assembly. While a very old concept, the IBC only recently came to include a specific acknowledgement and regulations for its use. As often happens with new regulations, we are seeing interesting interpretations, and in this case the most common is in regard to the determination the fire ratings needed for each of the walls that make up a double fire wall assembly. This proposal seeks to add a new section and a new table that will add clarity by specifically stating what the minimum fire-resistance rating must be for each of the walls that make up a double fire wall assembly. The values specified in new Table 706.5 are fundamentally based upon Harmathy's Ten Rules of Fire Endurance Ratings (1965) and are consistent with those found in NFPA 45, and which have been documented by actual fire tests.

Harmathy's Rule 1 - The "thermal" fire endurance of a construction consisting of a number of parallel layers is greater than the sum of the "thermal" fire endurences characteristic of the individual layers when exposed separately to fire. The minimum performance of an untested assembly can be estimated if the fire endurance of the individual components is known. Though the exact rating of the assembly cannot be stated, the endurance of the assembly is greater than the sum of the endurance of the components.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The code change only adds clarity to the construction of a double fire wall.

FS26-21

IBC: 706.2

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

2021 International Building Code

Revise as follows:

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. *Fire walls* designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.

Exception ~~Exceptions:~~

1. In *Seismic Design Categories* D through F, ~~where double fire walls are used in accordance with NFPA 221~~, floor and roof sheathing not exceeding 3/4 inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction* where either of the following conditions are met:
 - 1.1. Double fire walls are used in accordance with NFPA 221
 - 1.2. A noncombustible fire wall assembly shall be located directly between two one hour fire resistance rated bearing walls with each bearing wall rated for fire exposure from the room side and with fire blocking in the concealed wall spaces between the fire wall and studs on each side accordance with Section 718.2.2.

Reason Statement: In high seismic areas it is absolutely necessary to tie portions of the structure seismically together to prevent pounding of portions of the building on each side of the fire wall and to provide shear transfer across the fire wall. This is best accomplished by extending the floor sheathing through the fire wall which has been a practice in high seismic areas for numerous years. Finally a code change was approved in the 2018 IBC which acknowledged this practice in buildings with double fire walls.

A similar common practice in Type IIIA buildings with three hour noncombustible fire walls is to run the floor sheathing continuous and build a one hour bearing wall on each side to support the one hour structure. Because this type of assembly has a bearing wall on each side of the three hour fire resistance rated non bearing fire wall, the opposite bearing wall away from the fire is protected.

Similar to a double fire wall (covered by the existing exception), the fire wall is protected from collapse by the intact bearing wall on the side away from the fire exposure. The continuous floor or roof sheathing, which is no greater than 3/4" nominal, is not felt to be a threat to cause collapse of the fire wall once the fire has burned long enough on one side to breach the first one hour bearing wall. Since 3/4" sheathing does not meet the requirements of a 1.5 inch fire block in 718.2.1, additional fire blocking must be provided on each side of the 3 hour noncombustible fire wall termination at the 3/4" floor sheathing providing additional resistance to both vertical and lateral burning of the floor sheathing holding the fire wall in place.

The exception is renumbered to 1 since two other exceptions are also submitted under different code change proposals.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This code change makes it clear an existing practice approved by numerous jurisdictions for several years in high seismic areas is recognized.

FS26-21

FS27-21

IBC: 706.2

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

2021 International Building Code

Revise as follows:

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. Fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.

Exception Exceptions:

1. In *Seismic Design Categories* D through F, where double *fire walls* are used in accordance with NFPA 221, floor and roof sheathing not exceeding 3/4 inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction*.
2. All of structure on both sides of the fire wall shall have a fire resistance rating no less than required for the fire wall.

Reason Statement: Newly incorporated Type IV-A construction has limits on allowable area unlike Type IA unlimited area highrise buildings. Because of equation 5-2 the floor plate of a Type IV-A building gets smaller as the number of stories increases. Because of this it is possible a fire wall would be required in an 18 story Type IV-A building with a three hour primary structural frame. If the floor system is directly attached to the columns (as in Brock Commons located at University of British Columbia), the two way CLT floor system would also have to be 3 hour fire resistance rated based on the definition of primary structural frame in Section 202. If the entire structure is required to be 3 hour fire resistance rated (the same as the fire wall), then there is no need for the independent collapse language since the building would be fire resistance rated as required for the fire wall and the fuel load would be burned out long before collapse becomes an issue.

Cost Impact: The code change proposal will decrease the cost of construction

The current code requirement for independent collapse of a structure on each side of a fire wall that is rated the same as the building is not feasible.

FS27-21

FS28-21

IBC: 706.2

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

2021 International Building Code

Revise as follows:

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. Fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.

Exception Exceptions:

1. In *Seismic Design Categories* D through F, where double fire walls are used in accordance with NFPA 221, floor and roof sheathing not exceeding 3/4 inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction*.
2. The adjacent structure on both sides providing vertical support of the fire wall shall have a fire resistance rating no less than required for the fire wall and shall be designed and constructed to allow collapse of lesser fire resistance rated portions of the structure beyond on either side without collapse of the fire wall under fire conditions.

Reason Statement: With the addition of Type IV-A the primary structural frame is the same three hour fire resistance rating as required for the fire wall and the floors are two hours. With Type IV-B and Type IV-C construction a designer could choose to make the primary structural frame have the same three hour fire resistance rating as required for the fire wall on each side of the wall. Other portions (floor and roof deck) or building bays beyond could be constructed at a lesser 2 hour fire resistance rating. The intent of the code is for the fire wall supporting structure to be rated as required for the fire wall. It is not feasible to have independent collapse on either side when the 3 hour frame is rated the same as the fire wall. Other portions of the building rated less than the three hour fire resistance rating of the fire wall and primary frame on each side of the fire wall can be detailed and constructed to fail without causing the fire wall and primary frame on either side of the fire wall to fail.

Since the fire wall remains intact, this would meet the intent of the code.

Cost Impact: The code change proposal will decrease the cost of construction

It is not feasible to require independent collapse of the structure on each side of a fire wall that is rated the same as the fire wall.

FS28-21

FS29-21

IBC: 706.1.2 (New), 706.2

Proponents: David Collins, representing The American Institute of Architects (dcollins@preview-group.com)

2021 International Building Code

Add new text as follows:

706.1.2 Double fire walls. Double fire walls designed and constructed in accordance with NFPA 221 and its Annex shall be deemed to comply with this section.

Revise as follows:

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. ~~*Fire walls* designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.~~

Exception: In *Seismic Design Categories* D through F, where double *fire walls* are used in accordance with NFPA 221, floor and roof sheathing not exceeding $\frac{3}{4}$ inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction*.

Reason Statement: The use of NFPA 221 for the design and construction of double fire walls is permitted in Section 706.2 regarding structural stability. Additional details and specific requirements in NFPA 221 go beyond simply structural stability and should be a part of the designated requirements for design of fire walls.

Cost Impact: The code change proposal will decrease the cost of construction

This code change adds clarification how NFPA 221 is used to provide for double fire walls which are significantly less expensive to build than independent fire walls.

FS29-21

FS30-21

IBC: 706.2

Proponents: Kyle Parag, representing Division of Fire Prevention & Control (Kyle.Parag@state.co.us)

2021 International Building Code

Revise as follows:

706.2 Structural stability. *Fire walls* shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions. Approved connections of materials that are not building elements to fire walls shall not be construed to reduce the structural stability of the fire wall. Fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section.

Exception: In *Seismic Design Categories* D through F, where double *fire walls* are used in accordance with NFPA 221, floor and roof sheathing not exceeding $\frac{3}{4}$ inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of *light frame construction*.

Reason Statement: Structural stability is a difficult subject for building inspectors to accurately assess in the field. The current wording of the section does not provide any method for building officials or inspectors to make judgements of seemingly obvious issues in regards to the subject. Issues in the field with soffits, furring, flashing, grid, cabinets and even lockers continually cause issues to inspectors, as they are unsure if these items are allowed to be connected to the structurally independent fire wall and the remaining structure. This change will give the building official a code path to allow these simple item connections without having the project structural engineer re-evaluate the design.

Change is carefully worded to provide latitude to the building official of requiring certain approved methods in unforeseen conditions.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Wording modification to make administration of the code simpler.

FS30-21

FS31-21

IBC: 706.3

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

2021 International Building Code

Revise as follows:

706.3 Materials. *Fire walls* shall be of any *approved* noncombustible materials.

Exception: Buildings of Type III, IV and V construction.

Reason Statement: The requirement for noncombustible fire walls in buildings of type III and IV construction is problematic in tall buildings, control of shrinkage or differential vertical shrinkage between dissimilar noncombustible fire wall materials and the combustible building bearing wall construction may cause damage to the fire wall. In high seismic areas the last thing the structural designer wants to do is put a heavy, earthquake load attracting concrete or masonry wall in a relatively light wood structure.

When CLT was added to the code, a three hour load bearing E-119 test was provided by the American Wood Council to justify the fire resistance of CLT. It was constructed of 5 ply CLT with one layer of 5/8" type X gypsum each side. In the 2021 code the same three hour bearing wall for Type IV-A construction would require 2/3 of the fire resistance to come from noncombustible protection on each side so the wall would have 3 layers of 5/8" type x gypsum or equivalent on each side and would be expected to last in an E 119 test for over 4 hours. Because the wall is constructed of similar materials as the remainder of the structure, differential shrinkage issues would be minimized. There is no reason why Type IV construction can not have combustible fire walls as they would be expected to perform better than noncombustible walls both from a shrinkage compatibility standpoint and from a fire performance standpoint.

The core of Type III buildings are the same as Type V construction. Two hour combustible fire walls are allowed in Type V buildings and the allowable area is equal to half of the allowable area of Type III buildings. If double 2 hour wood frame fire walls were allowed in Type III construction the area per two hour wall would be exactly the same. Having two-two hour walls at the fire wall location would actually provide better resistance to collapse in a fire than the current practice of a one hour wood bearing wall on each side of the noncombustible three hour fire wall wall. Differential settlement issues would also go away with this option making damage to the noncombustible fire wall due to shrinkage of the wood bearing walls less of a factor.

Another potential combustible fire wall for Type III would be CLT. The advantage of CLT fire walls in Type III would be the immediate performance once installed to minimize the danger of construction fires instead of waiting for the wall to be completed.

Cost Impact: The code change proposal will decrease the cost of construction

Following science and allowing options of more materials that perform equal or better to current noncombustible fire walls would result in less cost.

FS31-21

FS32-21

IBC: 706.3

Proponents: Christopher Athari, Hoover Treated Wood Products, representing Hoover Treated Wood Products (cathari@ftrw.com)

2021 International Building Code

Revise as follows:

706.3 Materials. *Fire walls* shall be of any *approved* noncombustible materials.

Exception: Buildings of Type III or Type V construction.

Reason Statement:

Fire-retardant-treated wood is currently allowed for use in Type III construction in lieu of noncombustible materials in exterior walls. This code change eliminates any potential conflict with Section 602.3.

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

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Eliminates a potential conflict in the code and grants designers more flexibility.

FS32-21

FS33-21

IBC: 706.3

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 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 Statement: The interior walls of buildings of Type III construction and buildings of Type V construction are both permitted to be constructed of any material permitted by the code in accordance with Sections 602.3 and 602.5. Exterior walls of buildings of Type III construction are required to be constructed of noncombustible materials with fire retardant treated wood framing and sheathing within the exterior wall assemblies. Fire walls are interior walls, and as such, they should be permitted to be constructed of any materials that is permitted by the code in accordance with 602.3.

Cost Impact: The code change proposal will decrease the cost of construction
Cost of construction can be decreased as any materials permissible by Code can be utilized for these fire walls.

FS33-21

FS34-21

IBC: 706.3

Proponents: Paul Coats, representing American Wood Council (pcoats@awc.org)

2021 International Building Code

Revise as follows:

706.3 Materials. *Fire walls shall be of any approved noncombustible materials.* constructed of any of the following materials:

Exception: Buildings of Type V construction.

1. Fire walls in buildings of Type I, II, IV-A, and IV-B construction shall be of any noncombustible materials permitted by this code.
2. Fire walls in buildings of Type III, IV-C, and IV-HT construction shall be of noncombustible materials, or cross-laminated timber (CLT) and appurtenant heavy timber structural members having noncombustible protection on each side of the fire wall with a minimum assigned time of 80 minutes for a two-hour fire wall and 120 minutes for a three-hour fire wall and complying with Section 722.7.
3. Fire walls in buildings of Type V construction shall be of any materials permitted by this code.

Reason Statement: This proposal does two things. First, it changes the structure of the section. The new structure will specify the materials based on a list that corresponds to the types of construction (i.e., Types I, II, III, IV, and V). Second, this proposal would permit cross-laminated timber walls with noncombustible protection as fire walls in Types III, IV-C, and IV-HT construction.

The ICC Tall Wood Building Ad Hoc Committee (TWB) reviewed extensive data, including various presentations, at the inception of its work. Upon deliberation of that information, they decided that there seemed to be three levels of construction performance for the new mass timber systems. The TWB Codes Work Group determined that, based on the available data and research, the construction type with mid-level protection, Type IV-B construction, performed equivalently to Type I-B. Since Type I-B is a noncombustible type of construction, it makes sense to include Types IV-A and IV-B in item 1 which requires noncombustible materials for fire walls. The net effect here is that buildings of those two mass timber types will be required to use noncombustible materials for fire walls.

Type IV-C and IV-HT are unprotected mass timber types of construction. It makes sense to permit fire walls to be constructed of mass timber elements of the required fire resistance with the additional caveat of having the required noncombustible protection typically required of rated walls in Types IV-A (and IV-B) construction. In Types IV-A and IV-B construction, the TWB required that where mass timber is required to be rated and protected, the noncombustible protection must constitute at least two-thirds of the required fire resistance rating of the assembly. For a two-hour fire wall, two-thirds of the rating is 80 minutes (at least two layers of 5/8-inch Type X gypsum wall board), and for a three-hour fire wall, it is 120 minutes (at least three layers of 5/8-inch Type X gypsum wall board). In the testing undertaken at the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives fire test lab during the TWB deliberations, this amount of protection was shown to be sufficient to protect mass timber and keep it from becoming involved in the full burn-out of a high fuel load fire without sprinkler activation or fire department intervention. Therefore mass timber fire walls constructed with the noncombustible protection as required in Type IV-A construction will result in performance more than adequate for the hazards associated with buildings of IV-C and IV-HT construction. Buildings of Type III construction are more limited in area and height than IV-C construction and therefore can be well served by these same rated and protected mass timber fire walls.

Reference to Section 722.7 provides for establishing the contribution of the noncombustible material to the required fire-resistance rating of the fire wall and the installation details for gypsum wall board layers as required for walls in the new Type IV-A and IV-B construction types.

Bibliography: For test reports, testing videos, and other supporting documentation related to the new mass timber provisions in the 2021 IBC, see this web page: <https://awc.org/tallmasstimber>.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

Since the proposal adds additional options for materials in three construction types, it will not increase the cost of construction. It may decrease the cost of construction when protected cross-laminated timber is used in lieu of noncombustible materials, depending on the variables involved.

FS34-21

FS35-21

IBC: 706.6

Proponents: Stephen Thomas, Colorado Code Consulting, a Shums Coda Assoc Company, representing Colorado Chapter ICC (stthomas@coloradocode.net); Timothy Pate, representing Colorado Chapter Code Change Committee (tpate@broomfield.org)

2021 International Building Code

Revise as follows:

706.6 Vertical continuity. *Fire walls* shall extend from the foundation to a termination point not less than 30 inches (762 mm) above both adjacent roofs.

Exceptions:

1. Stepped buildings in accordance with Section 706.6.1.
2. Two-hour fire-resistance-rated walls shall be permitted to terminate at the underside of the roof sheathing, deck or slab, provided that all of the following requirements are met:
 - 2.1. The lower *roof assembly* within 4 feet (1220 mm) of the wall has not less than a 1-hour *fire-resistance rating* and the entire length and span of supporting elements for the rated *roof assembly* has a *fire-resistance rating* of not less than 1 hour.
 - 2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the *fire wall*.
 - 2.3. Each building shall be provided with not less than a Class B *roof covering*.
3. Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck or slabs where both buildings are provided with not less than a Class B *roof covering*. Openings in the roof shall not be located within 4 feet (1220 mm) of the *fire wall*.
4. In buildings of Types III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks, provided that all of the following requirements are met:
 - 4.1. Roof openings are not less than 4 feet (1220 mm) from the *fire wall*.
 - 4.2. The roof is covered with a minimum Class B *roof covering*.
 - 4.3. The roof sheathing or deck is constructed of *fire-retardant-treated wood* for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected with $\frac{5}{8}$ -inch (15.9 mm) Type X *gypsum board* directly beneath the underside of the roof sheathing or deck, supported by not less than 2-inch (51 mm) nominal ledgers attached to the sides of the roof framing members for a distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.
5. In buildings designed in accordance with Section 510.2, *fire walls* located above the 3-hour *horizontal assembly* required by Section 510.2, Item 1 shall be permitted to extend from the top of this *horizontal assembly*.
6. Buildings with sloped roofs in accordance with Section 706.6.2.

Reason Statement: Exceptions 2 and 4 are similar in that they require that all of the requirements listed be met. However, the existing language in Exception 2 does not say this. This proposal is designed to make the two sections consistent and clarify the intent.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This language is intended to clarify the requirements and provide consistent language.

FS35-21

FS36-21

IBC: 706.7

Proponents: Dennis Richardson, representing self (dennisrichardsonpe@yahoo.com)

2021 International Building Code

Revise as follows:

706.7 Combustible framing in fire walls. Adjacent combustible members entering into a concrete or masonry *fire wall* from opposite sides shall not have less than a 4-inch (102 mm) distance between embedded ends. Where combustible members frame into hollow walls or walls of hollow units, hollow spaces shall be solidly filled for the full thickness of the wall and for a distance not less than 4 inches (102 mm) above, below and between the structural members, with noncombustible materials *approved for fireblocking*.

Mass timber members shall be permitted to frame through noncombustible fire walls when designed and constructed to allow collapse of the structure on either side of the fire wall or when the member and supports are designed and constructed with a fire resistance rating no less than the minimum required for the fire wall without collapse of the fire wall during fire conditions. Hollow spaces shall be solidly filled as required in this Section.

Reason Statement: Section 706.7 has not changed since being placed in the 2000 IBC. The existing language is problematic as most engineering designs require continuity to connect one portion of the building to another. With the advent of mass timber, research shows combustible beams and columns can be designed to have a fire resistance rating equal to or greater than the fire resistance rating of fire walls.

Wood has substantially higher insulating properties and relatively lower coefficient of thermal expansion when compared to steel and concrete making it unlikely to transfer heat from one side of the wall to another and unlikely to buckle when constrained by construction and heated in the fire compartment.

In order to be conservative, Type IVA and B construction was limited in area even though they have fire resistance ratings equal to Type IA and B construction in Table 601. Having limits on area cause Type IVA and B building footprints to get smaller and smaller under equation 5-2 divided by the number of stores as buildings get taller. Taller three hour and two hour Type IVA and B construction may have to incorporate fire walls into the construction whereas Type IA and B construction rarely if ever require fire walls.

Framing mass timber continuously through fire walls can be accomplished without causing the fire wall to fail. This is especially true if the mass timber is protected with noncombustible protection and is the same fire resistance rating as the wall. Section 706.7 as currently written could be interpreted to limit framing mass timber members through a fire wall even though they can be detailed to have equal or greater fire resistance rating than required for the fire wall.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This code change clarifies old language but does not change the fact wood beams are allowed to be constructed through fire walls.

FS36-21

FS37-21

IBC: 707.3, 707.3.1, 707.3.2, 707.3.3, 707.3.4, 707.3.5, 707.3.6, 707.3.7, 707.3.8, 707.3.9, 707.3.10, 901.7, TABLE 707.3.10

Proponents: Shane Nilles, City of Cheney, WA, representing Self (snilles@cityofcheney.org)

2021 International Building Code

Revise as follows:

707.3 Fire-resistance rating. The *fire-resistance rating* of *fire barriers* shall comply with the requirements of this codesection.

707.3.1 Shaft enclosures. The *fire-resistance rating* of the *fire barrier* separating building areas from a *shaft* shall comply with Section 713.4.

707.3.2 Interior exit stairway and ramp construction. The *fire-resistance rating* of the *fire barrier* separating building areas from an *interior exit stairway* or *ramp* shall comply with Section 1023.1.

707.3.3 Enclosures for exit access stairways. The *fire-resistance rating* of the *fire barrier* separating building areas from an *exit access stairway* or *ramp* shall comply with Section 713.4.

707.3.4 Exit passageway. The *fire-resistance rating* of the *fire barrier* separating building areas from an *exit passageway* shall comply with Section 1024.3.

707.3.5 Horizontal exit. The *fire-resistance rating* of the separation between building areas connected by a *horizontal exit* shall comply with Section 1026.1.

707.3.6 Atriums. The *fire-resistance rating* of the *fire barrier* separating *atriums* shall comply with Section 404.6.

707.3.7 Incidental uses. The *fire barrier* separating incidental uses from other spaces in the building shall have a *fire-resistance rating* of not less than that indicated in Table 509.1.

707.3.8 Control areas. *Fire barriers* separating *control areas* shall have a *fire-resistance rating* of not less than that required in Section 414.2.4.

707.3.9 Separated occupancies. Where the provisions of Section 508.4 are applicable, the *fire barrier* separating mixed occupancies shall have a *fire-resistance rating* of not less than that indicated in Table 508.4 based on the occupancies being separated.

707.3.10 Fire areas. The *fire barriers*, *fire walls*, *horizontal assemblies* or combinations thereof separating a single occupancy into different *fire areas* shall have a *fire-resistance rating* of not less than that indicated in Table 707.3.10. The *fire barriers*, *fire walls*, *horizontal assemblies* or combinations thereof separating *fire areas* of mixed occupancies shall have a *fire-resistance rating* of not less than the highest value indicated in Table 707.3.10 for the occupancies under consideration.

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 Table 901.7 Section 707.3.10.

TABLE 901.7 707.3-10

FIRE-RESISTANCE-RATING REQUIREMENTS FOR FIRE BARRIERS, FIRE WALLS OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS

OCCUPANCY GROUP	FIRE-RESISTANCE RATING (hours)
H-1, H-2	4
F-1, H-3, S-1	3
A, B, E, F-2, H-4, H-5, I, M, R, S-2	2
U	1

Reason Statement: Fire barriers, like fire partitions, are required by several sections of the code for the specific application of the sections. The required fire-resistance rating of those fire barriers is also prescribed by those sections. The code user must start at those sections to determine what type of rated wall, and what degree of rating is required, and then go to Section 707 to determine other specific requirements for the fire barrier construction. It is unnecessary to provide a full list of pointers from Section 707.3 back to the respective sections that told you to go to Section 707 in the first place. Such a loop does not exist for fire partitions and has no need for fire barriers. The only exception to the current code structure is for fire areas, so this proposal corrects the discrepancy as well by providing the fire area rating requirements within the section for fire areas to be consistent.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal contains no technical changes.

FS37-21

FS38-21

IBC: 707.5

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

2021 International Building Code

Revise as follows:

707.5 Continuity. *Fire barriers* shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such *fire barriers* shall be continuous through concealed space, such as the space above a suspended ceiling. *Joints* and voids at intersections shall comply with Sections 707.8 and 707.9

Exceptions:

1. *Shaft enclosures* shall be permitted to terminate at a top enclosure complying with Section 713.12.
2. *Interior exit stairway* and *ramp* enclosures required by Section 1023 and *exit access stairway* and *ramp* enclosures required by Section 1019 shall be permitted to terminate at a top enclosure complying with Section 713.12.
3. An *exit passageway* enclosure required by Section 1024.3 that does not extend to the underside of the floor or roof sheathing, slab or deck above shall be enclosed at the top with construction of the same *fire-resistance rating* as required for the *exit passageway*.

Reason Statement: The current wording of Exception 3 is for fire barriers of exit passageways that don't extend to the underside of the roof sheathing, slab or deck above. Exit passageways typically occur on the level of exit discharge and extend to the floor above instead of the roof above, so the wording in Exception 3 is proposed to be revised to apply to fire barriers that don't extend to the underside of floor or roof sheathing, slab or deck above. This wording is identical to wording in the body of this section.

This proposal also corrects a typo by adding a space between "*rating*" and "as".

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is a clarification that will not change the cost of construction.

FS38-21

FS39-21

IBC: 707.6, 707.7, 707.7.1

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

2021 International Building Code

Revise as follows:

707.6 Openings. Openings in a *fire barrier* shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m²). ~~Openings in enclosures for exit access stairways and ramps, interior exit stairways and ramps and exit passageways shall also comply with Sections 1019, 1023.4 and 1024.5, respectively.~~

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m²) where adjoining floor areas are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door* serving enclosures for *exit access stairways and ramps*, and *interior exit stairways and ramps*.
3. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E119 or UL 263 and has a minimum *fire-resistance rating* not less than the *fire-resistance rating* of the wall.
4. *Fire window assemblies* permitted in *atrium* separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
5. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door assembly* in a *fire barrier* separating an enclosure for *exit access stairways and ramps*, and *interior exit stairways and ramps* from an *exit passageway* in accordance with Section 1023.3.1.

707.7 Penetrations. Penetrations of *fire barriers* shall comply with Section 714.

Delete without substitution:

~~**707.7.1 Prohibited penetrations.** Penetrations into enclosures for *exit access stairways and ramps*, *interior exit stairways and ramps*, and *exit passageways* shall be allowed only where permitted by Sections 1019, 1023.5 and 1024.6, respectively.~~

Reason Statement: This proposal is to delete unnecessary references to other sections that are currently incomplete and incorrect. Section 707.6 for fire barrier openings is intended to be for opening size and length limitations, but also has a sentence that says openings for stairways, ramps and exit passageways must also comply with 1019, 1023.4 and 1024.5. First, 1019 for exit access stairways and ramps does not have any opening requirements so this reference shouldn't be made. Second, the list of sections is incomplete since other sections also have additional opening requirements, such as 713.7.1 that prohibits openings in shafts other than those necessary for the purpose of the shaft. Specific opening requirements in other sections must be followed whether they are referenced in 707.6 or not, so it is proposed to remove the incorrect and incomplete references to avoid confusion and conflicts in the code. Similarly, Section 707.7.1 for prohibited penetrations in fire barriers references 1019, 1023.5 and 1024.6. Again, 1019 has no penetration requirements and the list is incomplete since it doesn't include 713.8.1 for prohibited penetrations in shaft enclosures.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal is a clarification that will not change the cost of construction.

FS39-21

FS40-21

IBC: 707.6, 707.7, 707.7.1

Proponents: Stephen Thomas, representing Colorado Chapter ICC (stthomas@coloradocode.net)

2021 International Building Code

Revise as follows:

707.6 Openings. Openings in a *fire barrier* shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m²). Openings in enclosures for ~~shafts exit access stairways and ramps~~, *interior exit stairways and ramps* and *exit passageways* shall also comply with Sections ~~713.7-1019~~, 1023.4 and 1024.5, respectively.

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m²) where adjoining floor areas are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door* serving enclosures for *exit access stairways and ramps*, and *interior exit stairways and ramps*.
3. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E119 or UL 263 and has a minimum *fire-resistance rating* not less than the *fire-resistance rating* of the wall.
4. *Fire window assemblies* permitted in *atrium* separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
5. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door assembly* in a *fire barrier* separating an enclosure for *exit access stairways and ramps*, and *interior exit stairways and ramps* from an *exit passageway* in accordance with Section 1023.3.1.

707.7 Penetrations. Penetrations of *fire barriers* shall comply with Section 714.

Revise as follows:

707.7.1 Prohibited penetrations. Penetrations into enclosures for ~~shafts exit access stairways and ramps~~, *interior exit stairways and ramps*, and *exit passageways* shall be allowed only where permitted by Sections ~~713.8.1-1019~~, 1023.5 and 1024.6, respectively.

Reason Statement: This proposal corrects references to other sections that have additional requirements for fire barrier openings and penetrations. These sections currently refer to Section 1019 for exit access stairways and ramps, but Section 1019 has no information for openings and penetrations so these references are deleted. References are added for shaft enclosures that have additional requirements for openings and penetrations.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal corrects references to other sections that serve as pointers. Since compliance with these other sections is required regardless of pointers to these sections, there is no change to code requirements and no change in the cost of construction.

FS40-21

FS41-21

IBC: 707.6

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

707.6 Openings. Openings in a *fire barrier* shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m²). Openings in enclosures for *exit access stairways* and *ramps*, *interior exit stairways* and *ramps* and *exit passageways* shall also comply with Sections 1019, 1023.4 and 1024.5, respectively.

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m²) where adjoining floor areas are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door* serving enclosures for *exit access stairways* and *ramps*, and *interior exit stairways* and *ramps*.
3. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E119 or UL 263 and has a minimum *fire-resistance rating* not less than the *fire-resistance rating* of the wall.
4. *Fire window assemblies* permitted in *atrium* separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
5. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door assembly* in a *fire barrier* separating an enclosure for *exit access stairways* and *ramps*, and *interior exit stairways* and *ramps* from an *exit passageway* in accordance with Section 1023.3.1.
6. Openings providing entrance to an elevator car shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door assembly in a fire barrier that is an elevator hoistway enclosure.

Reason Statement: The doors to the elevator in an elevator shaft are limited by the size of the associated cab and addressed by the safety standards in ASME A17.1. The size of the shaft is determined by the car size and the number of cars. While this size and length limitation is a literal requirement in fire barriers, it is not typically applied to elevator shafts.

This proposal is submitted by the the ICC Fire Code Action Committee (FCAC).
ICC Building Code Action Committee (BCAC) worked with the FCAC to develop this proposal.

The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: FCAC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a clarification of existing criteria. This limitation was not typically applied to elevator shafts.

FS41-21

FS42-21

IBC: 707.6

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

2021 International Building Code

Revise as follows:

707.6 Openings. Openings in a *fire barrier* shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m²). Openings in enclosures for *exit access stairways* and *ramps*, *interior exit stairways* and *ramps* and *exit passageways* shall also comply with Sections 1019, 1023.4 and 1024.5, respectively.

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m²) where adjoining floor areas are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door* serving enclosures for *exit access stairways* and *ramps*, and *interior exit stairways* and *ramps*.
3. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E119 or UL 263 and has a minimum *fire-resistance rating* not less than the *fire-resistance rating* of the wall.
4. *Fire window assemblies* permitted in *atrium* separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
5. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a *fire door assembly* in a *fire barrier* separating an enclosure for *exit access stairways* and *ramps*, and *interior exit stairways* and *ramps* from an *exit passageway* in accordance with Section 1023.3.1.
6. Openings shall not be limited to an aggregate width of 25 percent of the length of the wall where opening serves a shaft enclosure in accordance with Section 713.
7. Openings shall not be limited to an aggregate width of 25 percent of the length of the wall where opening serves a chute access room in accordance with Section 713.13.3 or a chute discharge room in accordance with Section 713.13.4.

Reason Statement: This proposal adds two new exceptions to the 25% length limitation for fire barrier openings. This section already includes Exceptions 2 and 5 for openings into stair, ramp and exit passageway enclosures where it is not practical to meet this length limitation since the door opening typically takes up well over 25% of the length of the wall. The two new exceptions are proposed for the same reason - it is simply not practical to meet this length limitation. Exception 6 is for shaft enclosures where door openings typically exceed 25% of the length of a wall - consider elevator doors or shaft access doors that take up nearly the entire length of the wall. Exception 7 is for chute access rooms and discharge rooms. Chute access rooms are typically very small rooms and it is not practical to meet the 25% limitation for the door into these rooms without oversizing the room. Chute discharge rooms often have a large door opening to allow passage of trash or recycling dumpsters and it is not practical to meet the 25% limitation without oversizing the room.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. Due to impracticality of meeting the the 25% length limitation for shafts, chute access rooms and chute discharge rooms, it is believed that this requirement is typically not enforced so this proposal would not change the cost of construction.

FS42-21

FS43-21

IBC: 707.8

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

707.8 Joints. *Joints* made in or between *fire barriers*, and *joints* made at the intersection of *fire barriers* with the underside of a fire-resistance-rated floor or roof sheathing, slab or deck above, and ~~the exterior vertical wall intersection with other fire-resistance-rated wall assemblies~~ intersection shall comply with Section 715.

Reason Statement: This proposal clarifies that the joint requirements apply to the intersection of fire barriers and other fire-resistance-rated wall assemblies (e.g. a smoke barrier wall) and not solely to exterior wall assemblies. As revised this Section addresses just fire-resistance-rated walls. Intersections with nonfire-resistance-rated wall assemblies are covered in Section 707.9.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal simply clarifies joint protection requirements already stated in Section 715.3.

FS43-21

FS44-21

IBC: 707.9, 715.6 (New)

Proponents: Richard N Walke, Creative Technology Inc., representing Creative Technology Inc. (RichWalke61@gmail.com)

2021 International Building Code

Revise as follows:

707.9 Voids at intersections. The voids created at the intersection of a *fire barrier* and a nonfire-resistance-rated *roof assembly* or a nonfire-resistance-rated *exterior wall* assembly shall be filled. ~~An approved material or system shall be used to fill the void, and shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases; comply with Section 715.~~

Add new text as follows:

715.6 Fire barrier/nonfire-resistance-rated roof assembly intersections. Voids created at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be filled by an approved material or system to retard the passage of fire and hot gases.

Reason Statement: This proposal makes the following editorial changes:

1. It moves the details on how to protect the voids created at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof assembly from Section 707.9 to new Section 715.6 where it more appropriately belongs.
2. It removes redundant language that is already covered in Section 715.2.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal does not change the cost of construction as the changes are editorial and do not add new construction requirements.

FS44-21

FS45-21

IBC: 202 (New), SECTION 202, 707.9, 715.2, 715.6 (New), ASTM Chapter 35 (New)

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Add new definition as follows:

CONTINUITY HEAD-OF-WALL JOINT SYSTEM. An assemblage of specific materials or products that are designed to resist the passage of fire through voids created at the intersection of fire barriers and the underside of nonfire-resistance-rated roof assemblies for a prescribed period of time.

Revise as follows:

[BF] F RATING. The time period that the *through-penetration firestop system*, ~~or perimeter fire containment system~~ or continuity head-of-wall joint system limits the spread of fire through the penetration or void.

[BF] T RATING. The time period that the *penetration firestop system*, including the penetrating item, or continuity head-of-wall joint system limits the maximum temperature rise to 325° F (~~163~~ 181 °C) above its initial temperature through the penetration or void on the nonfire side ~~when tested in accordance with ASTM E814 or UL 1479.~~

707.9 Voids at intersections. The voids created at the intersection of a *fire barrier* and a nonfire-resistance-rated *roof assembly* or a nonfire-resistance-rated *exterior wall* assembly shall be filled. ~~An approved material or system shall be used to fill the void, and shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases comply with Section 715.~~

715.2 Installation. Systems or materials protecting *joints* and voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the *joint* or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases. *Fire-resistant joint systems*, ~~or systems used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections~~ and continuity head-of-wall joint systems shall also be installed in accordance with the listing criteria.

Add new text as follows:

715.6 Fire barriers/nonfire-resistance-rated roof assembly intersections. Voids created at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be filled by an approved material to retard the passage of fire and hot gases, or shall be protected by an approved continuity head-of-wall joint system tested in accordance with ASTM E2837 to provide an F rating/T rating for a time period not less than the required fire-resistance rating of the fire barrier in which it is installed.

Add new standard(s) as follows:

ASTM

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

E2837-2013 (2017): Standard Test Method for Determining the Fire Resistance of Continuity Head-of- Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies

Staff Analysis: A review of the standard proposed for inclusion in the code, E2837-2013(2017), Standard Test Method for Determining the Fire Resistance of Continuity Head-of- Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: This proposal revises the requirements for protecting voids at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof assembly as follows:

- A. It moves the details on how to protect this void from Section 707.9 to new Section 715.6, leaving Section 707.9 as simply a pointer to Section 715.
- B. The phrase relating to installation in a manner "so as not to dislodge, loosen or otherwise impair its ability to accommodated expected building movement" is not necessary in new Section 715.6 as it has been incorporated into Section 715.2 of the 2021 IBC.
- C. New Section 715.6 includes an OPTION for protecting this void with a tested continuity head-of-wall joint system, without changing the current protection option. The use of a continuity head-of-wall joint system provides a simpler method for code compliance and enforcement as the system defines the materials necessary and the installation details.
- D. A definition of continuity head-of-wall joint system is provided.

E. The definition of F rating is being revised to add continuity head-of-wall joint systems.

F. The definition of T rating is being revised to add reference continuity head-of-wall joint systems. In addition, it is being revised to remove reference to the two firestop test standards. Because these two firestop test standards were similarly removed from the definition of the F rating during the last code cycle, this change provides further consistency.

G. ASTM E2837 is being added as new referenced standard. There are currently over 20 continuity head-of-wall joint system tested and certified by UL.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal does not increase construction cost as it simply makes some editorial changes and offers an additional option to install a tested continuity head-of-wall joint system.

FS45-21

FS46-21

IBC: 202 (New), SECTION 202, 707.9, 715.2, 715.6 (New), ASTM Chapter 35 (New)

Proponents: Tony Crimi, A.C. Consulting Solutions Inc., representing International Firestop Council

2021 International Building Code

Add new definition as follows:

CONTINUITY HEAD-OF-WALL JOINT SYSTEM. An assemblage of specific materials or products that are designed to resist the passage of fire through voids created at the intersection of fire barriers and the underside of nonfire-resistance-rated roof or floor assemblies for a prescribed period of time.

Revise as follows:

[BF] F RATING. The time period that the *through-penetration firestop system*, ~~or perimeter fire containment system~~, or continuity head-of-wall joint system limits the spread of fire through the penetration or void.

[BF] T RATING. The time period that the *penetration firestop system*, including the penetrating item, or the continuity head-of-wall joint system limits the maximum temperature rise to 325° F (1.8163° C) above its initial temperature through the penetration on the nonfire side, ~~when tested in accordance with ASTM E814 or UL 1479.~~

707.9 Voids at intersections. The voids created at the intersection of a *fire barrier* and a nonfire-resistance-rated floor, roof assembly or a nonfire-resistance-rated *exterior wall* assembly shall be filled. ~~An approved material or system shall be used to fill the void, and shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases - comply with Section 715.~~

715.2 Installation. Systems or materials protecting *joints* and voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the *joint* or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases. *Fire-resistant joint systems* or systems used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections and continuity head-of-wall joint systems shall also be installed in accordance with the listing criteria.

Add new text as follows:

715.6 Fire barriers/nonfire-resistance-rated floor or roof assembly intersections. Voids created at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be filled by an approved material to retard the passage of fire and hot gases, or shall be protected by an approved continuity head-of-wall joint system tested in accordance with ASTM E2837 to provide an F rating/T rating for a time period not less than the required fire-resistance rating of the fire barrier in which it is installed.

Add new standard(s) as follows:

ASTM

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

ASTM E2837-17: Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM E2837-2013 (2017) Standard Test Method for Determining the Fire Resistance of Continuity Head-of- Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: This proposal revises the requirements for protecting voids at the intersection of a fire barrier and the underside of a floor slab, nonfire-resistance-rated roof assembly as follows:

- A. It moves the details on how to protect this void from Section 707.9 to new Section 715.6, leaving Section 707.9 as simply a pointer to Section 715.
- B. The phrase relating to installation in a manner "so as not to dislodge, loosen or otherwise impair its ability to accommodated expected building movement" is not necessary in new Section 715.6 as it has been incorporated into Section 715.2 of the 2021 IBC.
- C. New Section 715.6 includes an option for protecting this void with a tested continuity head-of-wall joint system, without changing the current protection option. The use of a continuity head-of-wall joint system provides a simpler method for code compliance and enforcement as the system defines the materials necessary and the installation details.
- D. A definition of continuity head-of-wall joint system is provided.

E. The definition of F rating is being revised to add continuity head-of-wall joint systems.

F. The definition of T rating is being revised to add reference continuity head-of-wall joint systems. In addition, it is being revised to remove reference to the two firestop test standards. Because these two firestop test standards were similarly removed from the definition of the F rating during the last code cycle, this change provides further consistency.

G. ASTM E2837 is being added as new referenced standard.

There are currently over 20 continuity head-of-wall joint system tested and certified by UL. This proposals supplements a Proposal submitted by others by adding floors.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposal makes some editorial changes and offers an additional option to install a tested continuity head of wall system.

FS46-21

FS47-21 Part I

IBC: 708.4.2, 713.11, 718.1, 718.3, 718.3.1, 718.4, 718.4.1

Proponents: Andrew Bevis, National Fire Sprinkler Association, representing National Fire Sprinkler Association (bevis@nfsa.org); Jeffrey Hugo, representing NFSA (hugo@nfsa.org)

THIS IS A 4 PART CODE CHANGE. PART I WILL BE HEARD BY THE FIRE SAFETY CODE COMMITTEE. PART II WILL BE HEARD BY THE FIRE CODE COMMITTEE. PART III WILL BE HEARD BY THE MECHANICAL CODE COMMITTEE. PART IV WILL BE HEARD BY THE PLUMBING CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Building Code

Revise as follows:

708.4.2 Fireblocks and draftstops in combustible construction. In combustible construction where *fire partitions* do not extend to the underside of the floor or roof sheathing, deck or slab above, the space above and along the line of the *fire partition* shall be provided with one of the following:

1. *Fireblocking* up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.2.1.
2. ~~Draftstopping~~ Draftstops up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.3.1 for floors or Section 718.4.1 for *attics*.

Exceptions:

1. Buildings equipped with an *automatic sprinkler system* installed throughout in accordance with Section 903.3.1.1, or in accordance with Section 903.3.1.2 provided that protection is provided in the space between the top of the *fire partition* and underside of the floor or roof sheathing, deck or slab above as required for systems complying with Section 903.3.1.1.
2. Where *corridor walls* provide a *sleeping unit* or *dwelling unit* separation, ~~draftstopping~~ draftstops shall only be required above one of the *corridor walls*.
3. In Group R-2 occupancies with fewer than four *dwelling units*, *fireblocking* and ~~draftstopping~~ draftstops shall not be required.
4. In Group R-2 occupancies up to and including four *stories* in height in buildings not exceeding 60 feet (18 288 mm) in height above *grade plane*, the *attic* space shall be subdivided by *draftstops* into areas not exceeding 3,000 square feet (279 m²) or above every two *dwelling units*, whichever is smaller.
5. In Group R-3 occupancies with fewer than three *dwelling units*, *fireblocking* and ~~draftstopping~~ draftstops shall not be required in floor assemblies.

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 ~~draftstopping~~ 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.

718.1 General. *Fireblocking* and ~~draftstopping~~ draftstops shall be installed in combustible concealed locations in accordance with this section. *Fireblocking* shall comply with Section 718.2. ~~Draftstopping~~ draftstops in floor/ceiling spaces and attic spaces shall comply with Sections 718.3 and 718.4, respectively. The permitted use of combustible materials in concealed spaces of buildings of Type I or II construction shall be limited to the applications indicated in Section 718.5.

718.3 ~~Draftstopping~~ Draftstops in floors. ~~Draftstopping~~ draftstops shall be installed to subdivide floor/ceiling assemblies where required by Section 708.4.2. In other than Group R occupancies, ~~draftstopping~~ draftstops shall be installed to subdivide combustible floor/ceiling assemblies so that horizontal floor areas do not exceed 1,000 square feet (93 m²).

Exception: Buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

718.3.1 ~~Draftstopping~~ Draftstop materials. ~~Draftstopping~~ Draftstop materials shall be not less than 1/2-inch (12.7 mm) *gypsum board*, 3/8-inch (9.5 mm) *wood structural panel*, 3/8-inch (9.5 mm) *particleboard*, 1-inch (25-mm) nominal lumber, cement *fiberboard*, batts or blankets of mineral wool or glass fiber, or other *approved* materials adequately supported. The integrity of *draftstops* shall be maintained.

718.4 ~~Draftstopping~~ Draftstops in attics. ~~Draftstopping~~ Draftstops shall be installed to subdivide *attic* spaces where required by Section 708.4.2. In other than Group R, ~~draftstopping~~ draftstops shall be installed to subdivide combustible *attic* spaces and combustible concealed roof spaces such that any horizontal area does not exceed 3,000 square feet (279 m²). *Ventilation* of concealed roof spaces shall be maintained in accordance with Section 1202.2.1.

Exception: Buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

718.4.1 ~~Draftstopping~~ Draftstop materials. Materials utilized for ~~draftstopping~~ draftstops of *attic* spaces shall comply with Section 718.3.1.

FS47-21 Part II

IFC: 707.1

Proponents: Andrew Bevis, National Fire Sprinkler Association, representing National Fire Sprinkler Association (bevis.andrew1988@gmail.com); Jeffrey Hugo, representing NFSA (hugo@nfsa.org)

2021 International Fire Code

Revise as follows:

707.1 Fireblocking and ~~draftstopping~~ draftstops. Required *fireblocking* and ~~*draftstopping*~~ *draftstops* in combustibile concealed spaces shall be maintained to provide continuity and integrity of the construction.

FS47-21 Part II

FS47-21 Part III

IMC: 202 (New), 504.2

Proponents: Andrew Bevis, National Fire Sprinkler Association, representing National Fire Sprinkler Association (bevis.andrew1988@gmail.com); Jeffrey Hugo, representing NFSA (hugo@nfsa.org)

2021 International Mechanical Code

Add new definition as follows:

DRAFTSTOP. A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and attics.

Revise as follows:

504.2 Exhaust penetrations. Where a clothes dryer exhaust duct penetrates a wall or ceiling membrane, the annular space shall be sealed with noncombustible material, *approved* fire caulking or a noncombustible dryer exhaust duct wall receptacle. Ducts that exhaust clothes dryers shall not penetrate or be located within any fireblocking, ~~draftstopping~~ draftstops or any wall, floor/ceiling or other assembly required by the *International Building Code* to be fire-resistance rated, unless such duct is constructed of galvanized steel or aluminum of the thickness specified in Section 603.4 and the fire-resistance rating is maintained in accordance with the *International Building Code*. Fire dampers, combination fire/smoke dampers and any similar devices that will obstruct the exhaust flow shall be prohibited in clothes dryer exhaust ducts.

FS47-21 Part III

FS47-21 Part IV

IPC: 202 (New)

Proponents: Andrew Bevis, National Fire Sprinkler Association, representing National Fire Sprinkler Association (bevis.andrew1988@gmail.com); Jeffrey Hugo, representing NFSA (hugo@nfsa.org)

2021 International Plumbing Code

Add new definition as follows:

DRAFTSTOP. A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and attics.

Reason Statement: This is an editorial change. The word draftstopping is used multiple times throughout the IBC, IFC, IMC and IPC. This term is used with no definition. However, the term draftstop is a defined term in the IBC and IFC. These are the same terms. This development replaces all occurrences of draftstopping with the defined term of draftstop. Additionally, this development inserts the definition for draftstop into the IMC and IPC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is an editorial change.

FS47-21 Part IV

FS48-21

IBC: 709.5

Proponents: John Woestman, Kellen Company, representing Builders Hardware Manufacturers Assoc. (BHMA)
(jwoestman@kellencompany.com)

2021 International Building Code

Revise as follows:

709.5 Openings. Openings in a *smoke barrier* shall be protected in accordance with Section 716.

Exceptions:

1. In Group I-1, Condition 2, Group I-2 and *ambulatory care facilities*, where a pair of opposite-swinging doors are installed across a corridor in accordance with Section 709.5.1, the doors shall not be required to be protected in accordance with Section 716. The doors shall be close fitting within operational tolerances, and shall not have a center mullion or undercuts in excess of $\frac{3}{4}$ inch (19.1 mm), louvers or grilles. The doors shall have head and jamb stops, and astragals or rabbets at meeting edges. ~~Where permitted by the door manufacturer's listing, positive latching devices are not required.~~ Factory-applied or field-applied protective plates are not required to be labeled.
2. In Group I-1, Condition 2, Group I-2 and *ambulatory care facilities*, special purpose horizontal sliding, accordion or folding doors installed in accordance with Section 1010.3.3 and protected in accordance with Section 716.

Reason Statement: These cross corridor doors do not require a manufacturer's listing, so this sentence is confusing. Thus, the first part of the sentence should be deleted.

Also, doors required to comply with Section 716 are required to be positive latching. But, these cross corridors are explicitly not required to comply with Section 716. Thus, the requirement to be positive latching should also be deleted.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Deleting this sentence cleans up an internal conflict in the code.

FS48-21

FS49-21

IBC: 710.4

Proponents: John Williams, representing Healthcare Committee (ahc@iccsafe.org)

2021 International Building Code

Revise as follows:

710.4 Continuity. *Smoke partitions* shall extend from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

Exception: In Group I-2, a lay-in ceiling system shall be considered capable of limiting the transfer of smoke where the ceiling tiles that weigh a minimum of one pound per square foot and where the HVAC system is fully ducted in accordance with Section 603 of the *International Mechanical Code*.

Reason Statement: Current interpretation of an allowable ceiling system is to be "monolithic." This type of ceiling is not feasible in a hospital setting, because main utility and ductwork lines run in the corridor to keep them out of patient care areas. This would facilitate the need for many access panels which compromise the smoke tight nature of the monolithic ceiling. The construction of the lay-in system would basically mean no open portions or gaps in the ceiling, either as an architectural feature or between items such as louvers. Normal ceiling fixtures such as lights, sprinkler heads, and diffusers and grills (as part of a fully ducted air system) can be considered part of the smoke tight system, as there is no opportunity for smoke to travel straight through them. A tight fitting lay-in grid is defined as one with no gaps in them, which is easily enforced via visual inspection and is therefore simply maintained.

Group I-2 is being specified, to make clear that this allowance applies to nursing homes (Condition 1) and hospitals (Condition 2), which is consistent with federal standards.

Lay in ceiling assemblies meeting this requirement would be consistent with listed fire resistance rated floor and roof ceiling assemblies using lay-in ceilings as a component of the assembly. Enforcement of this provision including fire code maintenance inspections would be far less challenging than currently exists for the fire-resistance rated floor- and roof-ceiling assemblies which require a specific manufacturer's product for each of the assemblies that are listed by an approved testing facility. This proposal would allow any manufacturer's product to be used as long as it met the 1 pound per square foot criteria and other code requirements related to combustibility or flame spread. This is also supported by UL's BXUV Guide Information - Fire Resistance Ratings - ANSI/UL 263, Section III - FLOOR-CEILINGS AND ROOF-CEILINGS, Paragraph 10 which states "Hold down clips are required for assemblies incorporating ceiling panels weighing less than 1 lb per square foot."

As noted in past studies, the ceiling tile weight is also consistent with the findings of NBSIR 81-2444 Smoke Movement Through A Suspended Ceiling System (by John H Klote, 1982, NBS/VA), as noted on page 4 which states "[t]he ceiling tiles weighed 49.6 N/m² (1.00 lb/ft²). During plan review, a cut sheet of the desired ceiling tile (readily available from any manufacturer) can be included in the review package or the one pound per square foot criteria can be listed in the specifications. The NBSIR 81-2444 report also notes in its abstract and conclusions that "smoldering fires of the type examined in this test series are not significant problems in hospitals." This is even more true today because of the expanded use of non combustible materials in construction as well as bedding and other typically used items in the hospital.

In terms of enforcement, hospitals have maintenance teams that are tasked with performing preventative maintenance and timely repairs as not to compromise the environment of care. Also, each hospital has personnel resources that deal specifically with regulatory issues. This regulatory staff has many regulations that deal with direct patient care, but they also help monitor the environment of care. There is also Infection Prevention professionals that Multidisciplinary teams regularly round in the hospital, reviewing delivery of care and the condition of the built environment. The multidisciplinary rounding team typically consists of representatives from Facilities, Regulatory, Infection Prevention, and leadership from the nursing care team. The status of a ceiling system is a key element that is observed to maintain its integrity.

A ceiling's role is a component of the life safety system of the hospital, by way of the relationship to activation of sprinkler heads and control of smoke. With the exception of mechanical rooms, all spaces in a patient care area have ceilings as part of the life safety system of the hospital, in particular the corridor. It is also a key component of the infection prevention elements of the hospital. These are some elements that Infection Prevention professionals focus on for the integrity of the ceiling:

- Minimize dust and particulates to enter patient care environments, including corridors, patient rooms, procedure rooms, storage rooms of medical supply, clean utility rooms, among others.
- Contribute to the air pressure relationships provided for each room. For example, negative pressure patient bed rooms to treat patients with infectious diseases.

When monitoring the integrity of the ceiling, missing or cracked tiles are a main area of focus, and are easily seen by all staff. The replacement of a ceiling tile is a top priority of a hospital maintenance department. This information is also tracked by the agencies that regulate hospitals, including Centers for Medicare and Medicaid Services (CMS), and deemed authorities including The Joint Commission (TJC). According to TJC, in 2009, citations in the Life Safety portion of surveys that involved ceilings ranked #2 in 2009. In 2019, this citation rank fell to #6. This demonstrates the

focus on the issue, even when the criteria for a citation can be the smallest scratch, or stain from a water leak, much less the more obvious missing or tile with a corner out or other damage.

This code change proposal is a key element of compliance with the federal standards that are enforced for I-2 occupancies, and are important to be aligned with those standards.

Also limiting the HVAC system to ducted systems will preclude the possibility of an open plenum return system. Plenum systems are generally not used in hospitals due to the required pressure relationships for infection prevention considerations and to maintain more accurate control of the temperature and humidity control.

Corridor walls are built to structure in most cases based on FGI (acoustic requirements), however, having to access the above ceiling space for inspection and maintenance causes issues with infection control, whereas maintaining a suspended acoustic ceiling to limit the transfer of smoke is visible and easily maintained and as noted above, is being done as part of infection control procedures with the interdisciplinary team.

This proposal is submitted by the ICC Committee on Healthcare (CHC). The CHC was established by the ICC Board to evaluate and assess contemporary code issues relating to healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. In 2020 the CHC held several virtual meetings, which included members of the committees as well as any interested parties, to discuss and debate the proposed changes. Information on the CHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CHC effort can be downloaded from the CHC website at CHC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This represents current common practice in Group I-2 facilities.

FS49-21

FS50-21

IBC: 712.1, 712.1.17 (New)

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 International Building Code

Revise as follows:

712.1 General. Each vertical opening shall comply in accordance with one of the protection methods in Sections 712.1.1 through ~~712.1.16~~ 712.1.17

Add new text as follows:

712.1.17 Interior exit stairways and ramps. Vertical openings contained entirely within an enclosure complying with Section 1023 shall be permitted.

Reason Statement: This proposal clarifies that interior exit stairways are permitted to penetrate floors. This proposal is only necessary because interior exit stairways have enclosures required by Section 1023, but they are not shaft enclosures regulated by Section 713.

We should be as unambiguous as possible with code language, so long as the intent is not compromised, and this proposal seeks to do that.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Code clarification only

FS50-21

FS51-21

IBC: 712.1.3.2

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

712.1.3.2 Automatic shutters. Protection of the vertical opening by *listed or approved* shutters at every penetrated floor shall be permitted in accordance with this section. The shutters shall be installed in accordance with the manufacturer's instructions. The shutters shall be of noncombustible construction and have a *fire-resistance rating* of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3.1 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.

Reason Statement: This proposal requires the shutters used to protect escalator openings to be *listed or approved*, rather than just approved. It also requires them to be installed in accordance with the manufacturer's instructions. There is currently a product available which is being marketed to meet this code provision, and is *listed* in a manner consistent with this proposal.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal will not increase construction cost but instead will now recognize both listed or approved shutters.

FS51-21

FS52-21

IBC: 712.1.3.2

Proponents: Richard N Walke, Creative Technology Inc., representing Creative Technology Inc. (RichWalke61@gmail.com)

2021 International Building Code

Revise as follows:

712.1.3.2 Automatic shutters. Protection of the vertical opening by approved shutters at every penetrated floor shall be permitted in accordance with this section. The shutters shall be of noncombustible construction and have a ~~fire-resistance-rating~~ fire-protection-rating, including fire and hose stream performance, of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3.1 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.

Reason Statement: Section 712.1.3.2 of the 2021 International Building Code (IBC) requires automatic shutters protecting vertical openings for escalators to have a *fire-resistance rating*. This requirement has been in place since the first edition of the International Building Code (IBC). A *fire-resistance rating*, as determined by ASTM E119 / UL 263, entitled "Standard for Fire Tests of Building Construction and Materials" would require the shutters to meet a temperature rise requirement of 250°F / 325°F on the unexposed surface during the fire test. Recognizing the products being used for this application are rolling steel shutters, the laws of physics would prevent them from meeting this temperature rise criteria. These products are listed based on a *fire-protection rating* as typically required for opening protectives in Section 716 of the IBC. A *fire-protection rating* does not require this temperature limitation. As such, it is proposed Section 712.1.3.2 be changed to reference a *fire-protection rating*. Additional information supporting this change includes the following:

1. The 1996 BOCA National Building Code (NBC) and 1994 SBCCI Standard Building Code (SBC) legacy codes contained similar language to that contained in the IBC. The NBC stated the required rating was a "fire-protection rating". The SBC states it was a "fire-resistance rating". So unfortunately, it seems like the original drafters of the IBC simply used the most restrictive language (fire-resistance) from the legacy codes without recognizing there is no technology which meets this requirement.
2. The requirement for a 1-1/2 hr rating is consistent with the rating periods typically associated with opening protectives, as documented in Table 716.1(2) of the 2021 IBC.
3. The 2003 through 2018 editions of the NFPA 101 Life Safety Code (LSC) states escalator opening shall be "... protected by rolling steel shutters appropriate for the fire resistance rating of the vertical opening ...". So the LSC ties the phrase "fire-resistance rating" to the opening in the barrier, not to the shutter itself. If one assumes the rolling steel shutter is an opening protective, the rating requirement of an opening protective is a fire-protection rating, typically somewhat less than the rating of the barrier in which it is installed. So at worst, the LSC is unclear on which rating is required.

The one product the proponent is aware of which is being marketed to meet this code provision is *listed* in a manner consistent with this proposal. So the approval of this proposal creates a clear path to code compliance. The code official reviews the listing online or the label on the product looking for the phrase fire-protection rating.

During the development of this proposal, the proponent heard the comment this proposal reduces life safety. While true in theory, the reality is the one listed product currently being utilized to comply with this provision is *listed* with a *fire-protection rating*. It's continued use under this proposed updated language would not change life safety whatsoever. One could even argue this proposal may increase life safety by eliminating the need for designers to propose creative solutions to meet the current code language based on the provisions of Section 104.11, **Alternate materials, design and methods of construction and equipment**.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

If one was to believe the original intent of the code language was to require a *fire-resistance rating*, this proposal would decrease the cost of construction as one would not need to use exotic materials to meet the temperature rise criteria of a *fire-resistance rating*.

FS52-21

FS53-21

IBC: 712.1.3.2

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

712.1.3.2 Automatic shutters. Protection of the vertical opening by approved shutters at every penetrated floor shall be permitted in accordance with ~~this section~~; all of the following:

1. The ~~shutters~~ shutter shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours.
2. The shutter shall ~~be so constructed as to~~ close immediately upon the actuation of a smoke detector installed in accordance with Section ~~907.3.1 and~~ 907.3.
3. The shutter shall completely ~~shut~~ close off the ~~well~~-vertical opening.
4. Escalators shall cease operation when the shutter begins to close.
5. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) ~~and~~.
6. The shutter shall be equipped with a ~~sensitive~~-sensing leading edge to ~~arrest its progress~~ stop closure where in contact with any obstacle, ~~and to continue its progress on release therefrom~~ to close when the obstacle is cleared.

Reason Statement: The FCAC has several proposals to this section that all work together. However, disapproval of any of the proposals will not jeopardize the remaining proposals. This proposal reformats Section 712.1.3.2 into a "bullet point" format and includes minor technical and editorial changes.

The reference change from 907.3.1 to 907.3, for smoke activated devices is consistent with similar references in Sections 716.2.6.6 and 717.3.3.2.

The change to sensing leading edge reflects the commonly used industry term.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction

No change to construction cost as this proposal is primarily an editorial reformatting. The changes do not mandate anything new which increases the cost of construction.

FS53-21

FS54-21

IBC: 712.1.15

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 International Building Code

Revise as follows:

712.1.15 Skylights-Roof openings and penetrations. ~~Skylights~~ *Openings* and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated *roof assembly* is maintained. Unprotected ~~skylights openings and penetrations~~ shall not be permitted in *roof assemblies* required to be fire-resistance rated in accordance with Section 705.8.6. The supporting construction shall be protected to afford the required *fire-resistance rating* of the *horizontal assembly* supported.

Exception: Openings and penetrations through a fire-resistance rated roof deck or slab shall be protected where they occur directly below an occupiable roof.

Reason Statement: This section applies to all openings and penetrations in a roof, but seems too focused on the specific example of skylights. The applicability to skylights would not change, but the code user would have a better understanding of how to use this section if it had a more appropriate title.

Requiring protection of penetrations and openings in the vicinity of occupiable roofs is in recognition that the area may have many combustible furnishings while also having large occupant loads. As such, a fire spreading to an occupiable roof from the floor below, although not as bad as a fire spreading to another occupiable floor, still presents a safety hazard to the occupants on the roof.

Cost Impact: The code change proposal will increase the cost of construction

As occupiable roof use continues to expand, the provisions regulating this use need to expand as well, where it is evident that the existing provisions are not creating safe buildings and structures. This is one such case.

FS54-21

FS55-21

IBC: 713.4

Proponents: Stephen Thomas, Colorado Code Consulting, a Shums Coda Assoc Company, representing Colorado Chapter ICC (stthomas@coloradocode.net)

2021 International Building Code

Revise as follows:

713.4 Fire-resistance rating. *Shaft 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 *shaft enclosure* shall include any *basements* but not any *mezzanines*. *Shaft enclosures* shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours. *Shaft enclosures* shall meet the requirements of Section 703.2.1.1.

Exception: Shafts permitted to have their fire-resistance rating reduced in high-rise buildings in accordance with Section 403.2.1.2.

Reason Statement: The intent of this proposal is to provide a cross reference back to the high-rise provisions Section 403.2.1.2 permits the rating of a shaft to be reduced by one-hour. Therefore, there is a conflict between that section and Section 713.4. This improves the language since it clarifies the intent of the provisions and makes the language correct in the application. I also eliminates the conflict between the two sections.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The intent of the is proposal is to clarify the language and provide a cross reference.

FS55-21

FS56-21

IBC: 713.12.1

Proponents: Homer Maiel, PE, CBO, representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay) (hmaiel@gmail.com)

2021 International Building Code

Revise as follows:

713.12.1 Penthouse mechanical rooms. A fire/smoke damper shall not be required at the penetration of the rooftop structure where shaft enclosures extend up through the roof assembly into a rooftop structure conforming to Section 1511. ~~Ductwork in the shaft shall be connected directly to HVAC equipment.~~

Reason Statement: The design of the mechanical system that is conveyed by the shaft enclosure may or may not contain actual duct work. However, even if the shaft itself were utilized as the means of conveying the exhaust or supply air and there were no direct connection to the HVAC equipment there should not be any created hazard which would require the installation of the fire/smoke damper at the shaft penetration of the roof.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This is clarifying where code is silent. It will not affect construction cost.

FS56-21

FS57-21

IBC: 713.13.4

Proponents: Eric Bressman, representing Ankrom Moisan Architects (ericb@ankrommoisan.com)

2021 International Building Code

Revise as follows:

713.13.4 Chute discharge room. Table 509.1 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 equal to based on the protection required for 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.

Reason Statement: The current language is confusing to both designers and building officials. It implies that openings into a termination room have to carry the same rating as the walls of the shaft, either 60 or 120 minutes. This is not the case, but the use of the words 'equal to' implies that it is. There could be no reference at all to the doors, and the requirements would be clearer than they are now since users would refer to Sections 707 for the design of the fire barriers and 716 for the associated opening protection requirements. The only places the Code references specific opening requirements for walls, is when they are not in alignment with Tables 716.1(2) and 716.1(3). An example of this is Section 3007.6.3, doorways into Fire Service Access Elevator lobbies. These lobbies have 1-hour smoke barrier walls around them, but require 45 minute rated doors. This is an exception to the typical 1-hour smoke barrier which would only carry a 20 minute requirement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal only clarifies the existing requirements.

FS57-21

FS58-21

IBC: 201 (New), 714.2, ASTM Chapter 35 (New)

Proponents: Jay McGuire, Fire Stop Technologies, Inc., representing Fire Stop Technologies, Inc. (jay@thornburgh-stl.com)

2021 International Building Code

Add new definition as follows:

Firestop Identification Device. A label or placard, of any type, that identifies the penetration firestop system.

Revise as follows:

714.2 Installation. A listed *penetration firestop* system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria. Penetration Firestop systems shall also be permanently identified with a device, label or other method 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

WK 70416: Standard Specification for On-Site Identification of Penetration Firestops, Fire-Resistive Joints and Perimeter Fire Barriers and Their Systems and Judgments

Staff Analysis: A review of the consensus draft of the standard proposed for inclusion in the code, ASTM WK 70416 Standard Specification for On-Site Identification of Penetration, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: Since the 2012 version of the IBC, Penetration Firestop Systems are inspected in accordance with ASTM E 2174, required by 1705.18 Special Inspections. Penetration firestop systems are installed in accordance with the listing criteria and the manufacturers installation instructions. While the inspector should have the inspection documents at the site, it is still not easy to identify which of the many listings was used at any particular location. The reason for this proposal is to make inspections easier and faster by posting the listing design number and other minimum information at the penetration on the jobsite. Using an identification device results in a less costly project in new construction because the inspector does not have to search an inspection document or directory with thousands of listings for the particular application being inspected. The building owner and manager saves time when they are restoring, replacing damaged penetration firestop systems, speeding the repair process. This standard, under development at ASTM, should be approved soon. A new definition for Firestop identification device has been added as well.

Cost Impact: The code change proposal will increase the cost of construction

The cost to install a identification device is about \$.10 US - ten cents - per penetration. Some or all of the costs are recovered through reduced time needed for researching and finding listings by inspection and building owner and manager personnel.

FS58-21

FS59-21

IBC: 714.2.1 (New), 715.2.1 (New)

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

2021 International Building Code

Add new text as follows:

714.2.1 Contractor Qualifications. In high-rise buildings and buildings containing a Group I-2 occupancy, listed penetrations systems shall be installed by contractor companies qualified by Underwriters Laboratories (UL), FM Approvals (FM) or an approved agency.

Exceptions:

1. Where the work is of a minor nature as approved by the building official.
2. Work performed in accordance with the International Existing Building Code other than an Addition.

715.2.1 Contractor Qualifications. In high-rise buildings and buildings containing a Group I-2 occupancy, listed fire resistant joint systems shall be installed by contractor companies qualified by Underwriters Laboratories (UL), FM Approvals (FM) or an approved agency.

Exceptions:

1. Where the work is of a minor nature as approved by the building official.
2. Work performed in accordance with the International Existing Building Code other than an Addition.

Reason Statement: There currently is a big risk to fire and life safety due to firestop systems and fire resistant joint systems not always installed to in accordance with the listing or manufacturer's installation instructions.

Building survey findings have shown penetration and fire-resistive joint system installation deficiencies demonstrating a lack of knowledge regarding penetration firestop systems by many entities and employees in the construction industry. There is a lack of knowledge and respect for the complex listings, and disregard for the manufacturer's installation instructions.

The exceptions address concerns identified in previous code change cycles. The code official can determine that the work is of such a nature that the contractor qualifications need not apply. The second exception allows building owners to use in-house personnel or other contractors to do work in an existing building. However, the basic requirement that moving forward the quality of installation of firestop systems and fire resistant joint systems will improve in high-rise buildings and Group I-2 occupancies where it is essential that compartmentation features perform as anticipated.

By adding a requirement that penetration firestop systems and fire-resistive joint systems be installed by a FM 4991 Approved or UL Qualified Firestop Contractor means there is a benchmark level of knowledge at the entity providing installations that become systems after installation in accordance with the listing criteria and the manufacturers installation instructions.

Both programs provide audit proven installation entity management systems resulting in knowledge and processes that results in the likelihood that listing criteria and manufacturers installation instructions are followed, providing better fire and life safety to buildings.

The FM 4991, Standard for the Approval of Firestop Contractors and UL Qualified Firestop Contractor Programs are similar to fabricator approval process in 1704.2.5.1 and manufacturers ISO 9000 quality management systems programs, but customized for the construction environment. The programs are administered by FM Approvals and UL, both independent of the Firestop Contractors International Association (FCIA) or firestop manufacturers, and the Contractors being audited.

The programs verify that procedures for worker training, installation, review of installation, documentation or inventory of systems, and more, comply with program requirements and the contractor's quality management system procedures. A designated responsible individual implements the program at the firestop contractor company.

The initial cost to become FM 4991 Approved or UL Qualified ranges from \$7000 to \$12,000. An annual audit is required by the UL and FM programs which costs about \$3,500. The contractor company spreads these costs amongst all their projects, meaning a small cost of doing business. Efficiencies gained from quality processes help offset the costs.

There is a large supply of FM 4991 Approved or UL Qualified Firestop Contractors. The contractors travel regions increasing availability providing competitive bidding to building owners and managers regardless of location.

There are enough FM 4991 Approved and UL Qualified Firestop Contractors to provide a competitive environment for the general contractor and building owner and manager, and, should this be mandated, many more will appear. Whereas it will be several years before this requirement would be in effect, there is plenty of time for other firestop installation entities to participate in the FM or UL programs.

Cost Impact: The code change proposal will increase the cost of construction

The firestop installation entity that understands systems selection, analysis, the listing criteria and manufacturers installation instructions installs the penetration firestop systems and joint systems correctly – which reflects the correct value for the installation. The firestop installation entity that does not know the industry 'systems' protocol and installs 'fire caulk' and not systems is not providing the work result demanded by the code and will be non-compliant. It is recognized that the cost of some projects may increase while the cost of other projects, where it has not been done correctly, will decrease.

FS59-21

FS60-21

IBC: 714.3

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

2021 International Building Code

Revise as follows:

714.3 Sleeves. Where sleeves are used, they shall be ~~securely fastened to the assembly penetrated~~ installed in accordance with manufacturer's installation instructions and the listing criteria for the listed system. Where listed systems are not used, sleeves shall be securely fastened to the assembly penetrated. The space between the item contained in the sleeve and the sleeve itself and any space between the sleeve and the assembly penetrated shall be protected in accordance with this section. Insulation and coverings on or in the penetrating item shall not penetrate the assembly unless the specific material used has been tested as part of the assembly in accordance with this section.

Reason Statement: Currently, sleeve installation details are only described generically in this section. The listing needs to be the guiding document for sleeve installations with firestop systems. Not all sleeves are required by the listing to be securely fastened to the assembly. In fact, some listings state fastening is not required. This change allows the instructions shown in the listing to take precedence, where it is part of the listing criteria. If the system is not a listed system, the sleeves shall be securely attached to the assembly penetrated.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposed language is consistent with current construction practice.

FS60-21

FS61-21

IBC: 714.4 (New)

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

2021 International Building Code

Add new text as follows:

714.4 Firestop identification devices. Listed penetration firestop systems shall be permanently identified with a device, label or other method. The device shall be handwritten with permanent ink, or pre-printed, legible tag or label, and of size to accommodate required information. The device shall be located on both sides of the fire barrier, fire partition, smoke barrier or fire wall and one side of a horizontal assembly. The device shall at a minimum have the following information:

1. Listing system number or engineering judgement number.
2. Date of Installation designated as 00/00/0000, (month/date/year)
3. Installing company name, contact information.
4. Manufacturer company name of the firestop system.
5. "Warning, Penetration Firestop System - Do Not Disturb, Remove or Tamper."

Adhesive or mechanically attached Identification devices shall be located within 6 inches (150 mm), of the penetration firestop system edge, on the assembly, 6 inches (150 mm) below or beside the firestop system. For groupings of penetrations of the same listing number, an identification device shall be arranged within 6 inches (150 mm) and located center under the grouping or within 6 inches (150 mm) to either side of the grouping. Hanging tags shall be attached to the penetrating item with permanently, within 6 inches (150 mm) of the assembly.

Reason Statement: Installing penetration firestop systems looks as easy as applying caulk or sealant, or device of some kind in a breach created in an assembly to accommodate through penetrating items.

Firestop systems are not easy to install because they are not just caulk or sealant, or some device, but a complex system comprised of the assembly, the breach, and it's type and size and the assemblage of materials used to build the penetration firestop assembly.

This proposal adds a requirement to identify the system used to maintain fire-resistance at the assembly in accordance with the simple language in this proposal. The language is taken from the FCIA Recommended Professional Practice for Firestop Systems, Fire-Resistive Joint, Perimeter Fire Containment Identification Systems. Special inspection has been a requirement in the IBC since the 2012 version of the Code. Using the identification system method in this proposal is a way for special inspection agency inspectors, general contractors, firestop installation contractor supervisors, code officials during construction, and building owner and manager, during the life of the building, to quickly know the listing number and evaluate the assembly for compliance. The listing criteria has the information needed to evaluate the new installation – and without it, it's impossible to evaluate. Even if there was not special inspection required, it speeds evaluation of the assembly for compliance during the building life cycle.

The identification device makes the evaluation and verification process much more efficient and effective, both in new construction and when the building owner and manager has to figure out what's in the assembly for repairs.

Cost Impact: The code change proposal will increase the cost of construction

The cost of an identification device will add a very small amount to the cost of construction but will decrease the cost of inspection and maintenance. The reduction in new construction special inspection and the annual visual inspection required of the building owner by the International Fire Code is a result of much less time needed to identify the firestop system. Without the listing number, searching the publicly available directories is a long process.

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

FS61-21

FS62-21

IBC: 714.4.1.2, 714.5.1.2

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 International Building Code

Revise as follows:

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approved penetration firestop* system installed as tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an *F rating* of not less than the required *fire-resistance rating* of the wall penetrated.

Exception: Where no tested system exists for a penetration scenario, penetration protection shall be permitted to be established in accordance with an engineering analysis based on a comparison of tested penetration firestop systems.

714.5.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approved through-penetration firestop* system installed and tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an *F rating/T rating* of not less than 1 hour but not less than the required rating of the floor penetrated.

Exceptions:

1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a *T rating*.
2. Floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a *horizontal assembly* do not require a *T rating*.
3. Floor penetrations of maximum 4-inch (102 mm) nominal diameter metal conduit or tubing penetrating directly into metal-enclosed electrical power switchgear do not require a *T rating*.
4. Where no tested system exists for a penetration scenario, penetration protection shall be permitted to be established in accordance with an engineering analysis based on a comparison of tested penetration firestop systems.

Reason Statement: The fire-resistance rating of building elements, components, or assemblies is permitted to be established by engineering analysis of similar tested items. This proposal would place penetrations on equal footing with the fire-resistance rating provision. This proposal would allow the longstanding and widely used practice of engineering judgements that are seen in the industry to deal with specific scenarios on individual projects where unique penetration requirements come up during the design or construction phases.

The guidelines and presentation sections of the reference in the bibliography are recommended for evaluation of these engineering judgments.

Bibliography: Recommended IFC Guidelines for Evaluating Firestop System Engineering Judgements, revised 10-2018, International Firestop Council (IFC), 15 Main Street Suite 754, Flemington, NJ 088222

Cost Impact: The code change proposal will decrease the cost of construction. Currently the only method for employing engineering judgments would be through a code modification in accordance with IBC Section 104.10. This would eliminate the requirement to demonstrate the impracticality of the provisions of the code in order to use the method.

FS62-21

FS63-21

IBC: 714.4.2

Proponents: Eric Bressman, representing Ankrom Moisan Architects (ericb@ankrommoisan.com)

2021 International Building Code

Revise as follows:

714.4.2 Membrane penetrations. *Membrane penetrations* shall comply with Section 714.4.1. Where walls or partitions 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* of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area, provided that the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m²) in any 100 square feet (9.29 m²) of wall area. The *annular space* between the wall membrane and the box shall not exceed 1/8 inch (3.2 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
 - 1.1. By a horizontal distance of not less than 24 inches (610 mm) **on center** where the wall or partition is constructed with individual noncommunicating stud cavities.
 - 1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag *mineral wool* insulation.
 - 1.3. By solid *fireblocking* in accordance with Section 718.2.1.
 - 1.4. By protecting both outlet boxes with *listed* putty pads.
 - 1.5. By other *listed* materials and methods.
2. *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 wall membrane and the box shall not exceed 1/8 inch (3.2 mm) unless *listed* otherwise. Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
 - 2.1. By the horizontal distance specified in the listing of the electrical boxes.
 - 2.2. By solid *fireblocking* in accordance with Section 718.2.1.
 - 2.3. By protecting both boxes with *listed* putty pads.
 - 2.4. By other *listed* materials and methods.
3. *Membrane penetrations* by electrical boxes of any size or type, that have been *listed* as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by boxes other than electrical boxes, provided that such penetrating items and the *annular space* between the wall membrane and the box, are protected by an *approved membrane penetration firestop system* installed as tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water, and shall have an F and T rating of not less than the required *fire-resistance rating* of the wall penetrated and be installed in accordance with their listing.
5. The *annular space* created by the penetration of an automatic sprinkler, provided that it is covered by a metal escutcheon plate.
6. *Membrane penetrations* of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that exceed 16 square inches (0.0103 m²) in area, or steel electrical boxes of any size having an aggregate area through the membrane exceeding 100 square inches (0.0645 m²) in any 100 square feet (9.29 m²) of wall area, provided that such penetrating items are protected by *listed* putty pads or other *listed* materials and methods, and installed in accordance with the listing.

Reason Statement: Standard framing of walls using studs is 16 or 24 inches on center. By revising the limitation to 'on center' allows boxes to be installed at intervals that align with the framing. I have found nothing in the archives to indicate that the 24" spacing is based on specific fire testing which would indicate this minor reduction would compromise the integrity of the walls' fire rating.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The minor change in spacing should not change the number of outlets in a building, but makes it simpler for the builder.

FS63-21

FS64-21

IBC: 714.5, 714.5.1

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

2021 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 (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. 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 mm²) in any 100 square feet (9.3 m²) 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 mm²).
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.

Reason Statement: Section 712.1.10 currently permits unprotected vertical openings in parking garages for ramps, elevators and duct systems and Section 715.1 currently permits unprotected joints in floors and ramps within parking garages or structures. Based on these allowances, it goes to reason that penetrations through floors and ramps of parking garages should also be permitted to be unprotected. This proposal allows such unprotected penetrations but is limited to concrete floors and ramps since these unprotected penetrations do not compromise the fire-resistance rating of the floor, while an unprotected penetration through a floor/ceiling assembly would allow a fire enter the cavity of the assembly and compromise the fire-resistance rating. These unprotected penetrations are further limited to penetrations with parking above and below the penetration, which is consistent with 712.1.10 and 715.1 that allow vertical openings and joints "in" or "within" parking garages or structures - this also essentially prohibits concealed penetrations which could allow a fire through a penetration to go undetected for some period of time.

Cost Impact: The code change proposal will decrease the cost of construction

This proposal will allow unprotected penetrations in garages which will reduce the cost of construction due to a reduction in through-penetration firestop systems.

FS64-21

FS65-21

IBC: 714.5.2

Proponents: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com)

2021 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 mm²) in any 100 square feet (9.3 m²) 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 mm²) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm²) in any 100 square feet (9.29 m²) 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.
9. The ceiling membrane of a maximum 2-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with a fire barrier complying with Section 707.

Reason Statement: The reason for this code change is to provide allowance for a fire barrier to penetrate a horizontal assembly. In the case of a fire partition intersecting with a horizontal assembly, exception # 7 would apply. What happens when a fire barrier is provided that is required to be continuous from the floor below to the underside of the assembly above? How does the fire barrier intersect with the horizontal assembly and still qualify as a fire barrier? Based on Section 707.5 for continuity, the fire barrier would have to penetrate the horizontal assembly as there is no exception here to allow for the fire barrier to stop at the bottom of the floor/ceiling assembly. This code language would recognize the fire barrier as a permitted membrane penetration based on how it is to be continuous to the underside of the floor sheathing.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The impact on the cost may actually decrease as additional firestopping materials may not be required if the intersection of the assemblies is permitted. Otherwise, no cost should change.

FS65-21

FS66-21

IBC: 714.5.1.2

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

714.5.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approved through-penetration firestop system* installed and tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an *F rating/T rating* of not less than 1 hour but not less than the required rating of the floor penetrated.

Exceptions:

1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a *T rating*.
2. Floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a *horizontal assembly* do not require a *T rating*.
3. Floor penetrations of maximum 4-inch (102 mm) nominal diameter metal conduit or tubing penetrating directly into metal-enclosed electrical power switchgear do not require a *T rating*.
4. 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 do not require a T rating. These penetrating items shall not be limited to the penetration of a single concrete floor, provided the area of the opening through each floor does not exceed 144 square inches (92,900 mm²).

Reason Statement: This proposal provides consistency with the temperature rise criteria (T rating) between penetrations protected with tested and listed systems versus those protected with concrete, grout and mortar. The language in this proposal is identical to the wording used to protect these same penetrations using concrete, grout and mortar in Section 714.5.1, Exception 2.

The code is currently inconsistent in the application of temperature rise criteria for continuous metallic penetrants such as pipes and conduit penetrating fire separations. Penetrations protected with concrete, grout, or mortar are permitted without a T rating, but the same penetrations protected with tested and listed systems would require the T rating. There is no technical justification for such a distinction. If anything, the tested systems have been specifically evaluated and will reliably achieve the same or higher level of performance.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will decrease the cost of construction

This proposal will decrease cost by expanding the exception and removing the need to insulate these penetrating items.

FS66-21

FS67-21

IBC: 714.5.2

Proponents: Timothy Pate, Colorado Chapter ICC Code change Committee, representing City and County of Broomfield (tpate@broomfield.org)

2021 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 mm²) in any 100 square feet (9.3 m²) 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 mm²) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm²) in any 100 square feet (9.29 m²) 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 1-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with a single 2 inch nominal thickness wood top plate and a maximum 2-hour fire-resistance-rated *horizontal assembly* is permitted to be interrupted with the a double 2 inch nominal thickness 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.

Reason Statement: This code change is proposing to add language to allow a single 2 X wood top plate to be equivalent to one layer of 5/8" type X drywall for a one hour rated horizontal floor/ceiling or roof/ceiling assembly. It also still allows a double 2 X wood top plate to be equivalent to two layers of 5/8" type X drywall for a two hour rated horizontal floor/ceiling or roof/ceiling assembly. It adds language to clarify that the top plates need to be nominal size - that is at least 1 1/2" thick. We have seen some architects and engineers specify a 3/4" thick top plate in order to allow a gap between top of wall to the floor or roof trusses in taller wood buildings and this change would clarify the original intent of the code change that I was able to get approved by the membership.

IBC section 722.1 states that the calculated fire resistance of exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC National Design Specification for Wood Construction (NDS). This chapter gives a nominal char rated of 1.5 inches of wood thickness per hour of fire resistance. Per NDS's calculations a single 2 X wood stud provides an equivalent of 60 minutes of fire protections. Per IBC Table 722.6.2(1), 5/8 inch Type X gypsum wall board provides 40 minutes of fire protection, so the protection by a 2 X wood stud is above and beyond that provided by one layer of 5/8 inch Type X gypsum. Utilizing the IBC calculated fire resistance method, a single 2 X wood top plate provides equal or greater fire resistance to one layer of 5/8 inch Type X gypsum and a double 2 X wood top plate provides equal or greater fire resistance to two layers of 5/8 inch Type X gypsum.

Cost Impact: The code change proposal will not 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.

FS67-21

FS68-21

IBC: 715.2

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

715.2 Installation. Systems or materials protecting *joints* and voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the *joint* or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases. ~~Fire-resistant joint systems or systems used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections~~ and perimeter fire containment systems shall also be installed in accordance with the listing criteria.

Reason Statement: This is a clean up arising from changes in the last cycle. Proposal FS52-18 expanded on the installation requirements for joints and voids contained in Section 715.2, which included the "system used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections." Proposal FS53-18 introduced a new defined phrase "perimeter fire containment system" to describe the method of protecting this same void. Since these were two independent proposals, it was not possible to editorially combine the newly defined phrase "perimeter fire containment system" into the updated Section 715.2, covering Installation. This proposal is intended to do that, thereby simplifying Section 715.2. This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase the cost of construction. This change is editorial and does not add new construction requirements

FS68-21

FS69-21

IBC: 201 (New), 715.2, ASTM Chapter 35 (New)

Proponents: Jay McGuire, Fire Stop Technologies, Inc., representing Fire Stop Technologies, Inc. (jay@thornburgh-stl.com)

2021 International Building Code

Add new definition as follows:

Firestop Identification Device. . A label or placard, of any type, that identifies the fire-resistant joint system.

Revise as follows:

715.2 Installation. Systems or materials protecting *joints* and voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the *joint* or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases. *Fire-resistant joint systems* or systems used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections shall also be installed in accordance with the listing criteria. Fire-resistant Joint Systems shall be permanently identified with a device, label or other method 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

WK 70416: Standard Specification for On-Site Identification of Penetration Firestops, Fire-Resistive Joints and Perimeter Fire Barriers and Their Systems and Judgments

Staff Analysis: A review of the consensus draft of the standard proposed for inclusion in the code, ASTM WK 70416 Standard Specification for On-Site Identification of Penetration, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: Fire-resistant joint systems, when required, are installed in accordance with the listing criteria and the manufacturers installation instructions. Since the 2012 version of the IBC, fire-resistant joint systems are inspected in accordance with ASTM E 2393, required by 1705.18 Special Inspections. While the inspector should have the inspection documents at the site, it is still not easy to identify which of the many listings was used at any particular location. The reason for this proposal is to make inspections easier and faster by posting the listing design number and other minimum information at the location of the fire-resistive joint system. The marking will be located where convenient, and not interfering with the aesthetics of the assembly. Using an identification device results in a less costly project in new construction because the inspector does not have to search a directory with thousands of listings for the particular application inspected. The building owner and manager saves time when they are restoring, replacing damaged penetration firestop systems, speeding the repair process. This standard, under development at ASTM, should be approved soon. A definition for these firestop identification devices is also submitted as part of this proposal.

Cost Impact: The code change proposal will increase the cost of construction

The cost to install a identification device is about \$.10 US - ten cents - per identification device, installed every 30', or .003/lineal foot. Some or all of the costs are recovered thorough reduced time needed for researching and finding listings by inspection and building owner and manager personnel.

FS69-21

FS70-21

IBC: 715.2, 715.2.1 (New), 715.2.2 (New)

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

2021 International Building Code

Revise as follows:

715.2 Installation. ~~Systems or materials protecting joints and voids shall be installed in accordance with 715.2.1 and 715.2.2. Systems or materials protecting joints and voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the joint or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases. Fire-resistant joint systems or systems used to protect voids at exterior curtain walls and fire-resistance-rated floor intersections shall also be installed in accordance with the listing criteria.~~

Add new text as follows:

715.2.1 List system installation. Listed fire-resistant joint systems and perimeter fire containment systems shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

715.2.2 Approved materials installation. Approved materials protecting voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

Reason Statement: The 2018 Edition of the IBC had the language, 'installed in accordance with the listing criteria and the manufacturers installation instruction ... so as not to dislodge, loosen, or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gasses. The change in the 2021 Edition of the IBC has taken the installation sections out of the material and system requirements and put it in a consolidated installation section. While we agree with moving the language to the installation section, it seems that combining the 'materials' and 'systems' confuses when listings are needed and when manufacturers installation instructions are needed. To be crystal clear, we've broken the section into two sections:

1. Section requiring fire-resistive joint systems and perimeter fire containment systems
2. Section requiring materials and not systems.

Additionally, the listings do not always refer to the manufacturers installation instructions. Therefore, only having the word 'systems', does not connect the manufacturers installation instructions and listing criteria. This clarified section makes it clear what is required in each section of the code.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal is mostly editorial for clarification purposes and is consistent with current practice.

FS70-21

FS71-21

IBC: 715.3 (New)

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

2021 International Building Code

Add new text as follows:

715.3 Fire-resistant joint system identification devices. Fire-resistant joint systems shall be permanently identified with a device, label or other method. The device shall be handwritten with permanent ink, or pre-printed, legible tag or label, and of size to accommodate required information. The device shall at a minimum have the following information:

1. Listing system number or engineering judgement number.
2. Date of Installation designated as 00/00/0000. (month/date/year)
3. Installing company name, contact information.
4. Manufacturer company name of the fire-resistant joint system.
5. "Warning, Fire-Resistant Joint System - Do Not Disturb, Remove or Tamper."

Adhesive or mechanically attached identification devices shall be located within 6 inches (150 mm), of the fire-resistant joint system or the perimeter containment system edge. Asymmetrical assemblies shall have the identification device applied to the side protected by the joint system. Symmetrical assemblies shall have the identification device applied to both sides of wall. The identification device shall be located at intervals not exceeding 30 ft. Where the fire-resistive joint assembly is located in a horizontal assembly and walking surface, the identification device shall be located on or under the cover plate, or under the assembly.

Reason Statement: Installing fire-resistant joint systems and perimeter fire containment systems looks as easy as applying caulk or sealant, a spray material, or a metal or rubber material in a breach created in an assembly to accommodate movement or separate assemblies. Fire-resistant joint systems and perimeter fire containment systems are not easy to install because they are not just caulk or sealant, but a system comprised of the assembly, the breach, and it's type and size and the assemblage of materials used to build the assembly.

The proposal adds a requirement to identify the system used to maintain fire-resistance at the assembly in accordance with the simple language in this proposal. The language is taken from the FCIA Recommended Professional Practice for Firestop and Fire-Resistive Joint, Perimeter Fire Containment Identification Systems.

Special inspection has been a requirement in the IBC since the 2012 version of the Code. Using the identification system method in this proposal is a way for special inspection agency inspectors, general contractors, firestop installation contractor supervisors, code officials during construction, and building owner and manager, during the life of the building, to quickly know the listing number and evaluate the assembly for compliance. The listing criteria has the information needed to evaluate the new installation – and without it, it's impossible to evaluate. Even if there was not special inspection required, it speeds evaluation of the assembly for compliance during the building life cycle.

The identification device makes the evaluation and verification process much more efficient and effective, both in new construction and when the building owner has to figure out what's in the assembly for repairs.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The cost of an identification device will add a very small amount to the cost of construction but will decrease the cost of inspection and maintenance. The reduction in new construction special inspection and the annual visual inspection required of the building owner by the International Fire Code is a result of much less time needed to identify the joint system. Without the listing number, searching the publicly available directories is a long process.

The identification device cost per joint system is approximately \$0.10 US per device installed.

FS71-21

FS72-21

IBC: 715.3

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 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 minimum 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.

Reason Statement: Where joint protection is installed between different assemblies that have different fire-resistance ratings, the required fire-resistance rating of the joint protection itself is unclear. This proposal is intended to clarify that the joint protection only needs to meet the smallest required fire-resistance rating of the assemblies it is installed between.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Simply clarifying wording of the intent that is already present.

FS72-21

FS73-21

IBC: 715.3

Proponents: Eric Bressman, representing Ankrom Moisan Architects (ericb@ankrommoisan.com)

2021 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.
11. Horizontal assemblies where two-story openings are permitted in accordance with Section 712.1.9

Reason Statement: Where two adjacent stories are allowed to have unprotected vertical openings between them, there is no expectation of fire or smoke containment between these. Therefore, requiring joint protection in these locations is not warranted and adds unnecessary expense without any benefit or protection of the building or the occupants. This would not reduce the required protection of structural elements base on Table 601.

Cost Impact: The code change proposal will decrease the cost of construction
This change will reduce costs in those buildings with two-story openings only.

FS73-21

FS74-21

IBC: 715.4, 715.4.1

Proponents: Tony Crimi, representing North American Insulation Manufacturers Association (NAIMA), representing representing North American Insulation Manufacturers Association (NAIMA)

2021 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.

715.4.1 Fire test criteria. *Perimeter fire containment systems* shall be tested in accordance with the requirements of ASTM E2307.

Exception: Voids created at the intersection of the exterior curtain wall assemblies and floor assemblies where the vision glass extends to the finished floor level shall be permitted to be protected with an approved ~~material~~ system to prevent the interior spread of fire. Such ~~material~~ systems shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste in the horizontal orientation where subjected to ASTM E119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period not less than the fire-resistance rating of the floor assembly.

Reason Statement: This proposal provides additional clarification to the requirements and exceptions for perimeter fire containment systems (PFC).

First, it clarifies that a perimeter fire containment system can be installed in the voids between a floor assembly and any exterior wall or curtain wall. It then clarifies that, for the exception in 715.4, the protection of the void needs to be based on a system that has been test to ASTM E119, but in the horizontal orientation. This clarifies that it would not be acceptable for any individual material that has been part of an ASTM E119 test to be acceptable if it has not been tested in some configuration that represents an installation that is similar to the intended purpose here. For example, an insulation material tested to ASTM E119 within the cavity of an interior wall assembly provides no assurance that that material would provide the intended protection for a void installed horizontally between a floor assembly and a curtain wall. Information such as joint width, adhesion to substrates, fastening, etc. need to be representative of what is being installed

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal clarifies the intent of the provision and the exception.

FS74-21

FS75-21

IBC: 715.4, 715.5

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

2021 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.

Exception: *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.

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 ~~between stories~~.

Exception: *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. *Mezzanine* floors.

Reason Statement: Section 715.1 for fire-resistant joint systems includes exceptions for several types of floors, which essentially allows open joints between fire-resistant floors or floor/ceiling assemblies. This proposal extends exceptions that are applicable to curtain wall/floor intersections to the void at the curtain wall/floor intersection. If an open joint within these floors is acceptable, it goes to reason that it is also acceptable to have an open void between these floors and exterior curtain wall. The exceptions for this condition include floors within a dwelling unit, floors and ramps in parking garages or structures, and mezzanine floors. An example of the use of these exceptions is a parking garage on the lower floors of a building that have exterior curtain walls to "hide" the garage to match the exterior appearance of the building above the garage levels. Also, in Section 715.5, the words "between stories" is proposed to be deleted to align the wording of this section with that of 715.4 and 715.1.

Cost Impact: The code change proposal will decrease the cost of construction. For certain conditions, this proposal will remove the requirement for approved systems at voids at curtain wall/floor intersections so the cost of construction will decrease.

FS75-21

FS76-21

IBC: 715.6

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

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

Reason Statement: This proposal clarifies that this section covers voids created with all non-fire-resistance-rated wall assemblies, not just non-fire-resistance-rated curtain wall assemblies.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase the cost of construction. The proposal simply clarifies the voids are to be protected.

FS76-21

FS77-21

IBC: 716.1.1

Proponents: Curtis Gonzales, representing Smoke Guard, Inc. (curtis@smokeguard.com); Amanda Hickman, representing SmokeGuard, Inc. (amanda@thehickmangroup.com)

2021 International Building Code

Revise as follows:

716.1.1 Alternative methods for determining fire protection ratings. The application of any of the alternative methods specified in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252, NFPA 257, UL 9, UL 10B, ~~or UL 10C~~ or UL 10D. The required *fire resistance* of an opening protective shall be permitted to be established by any of the following methods or procedures:

1. Designs documented in *approved sources*.
2. Calculations performed in an *approved manner*.
3. Engineering analysis based on a comparison of opening protective designs having *fire protection ratings* as determined by the test procedures set forth in NFPA 252, NFPA 257, UL 9, UL 10B ~~or UL 10C~~ or UL 10D.
4. Alternative protection methods as allowed by Section 104.11.

Reason Statement: In the 2021 code cycle, UL 10D and the definition for Fire-Protective Curtain Assemblies were added. "UL 10D *Standard for Fire Tests of Fire-Protective Curtain Assemblies*", Edition 2 is an ANSI approved standard used for listing Fire-Protective Curtain Assembly opening protectives. Alternative methods for determining fire protection ratings should include all reasonable options. This change adds UL 10D, so Professionals can confidently use it as an alternative method for determining fire protection ratings.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This code change proposal will not increase or decrease the cost of construction because it adds another option for code compliance.

FS77-21

FS78-21

IBC: TABLE 716.1(2)

Proponents: Lawrence Cousin, Huckabee, representing Self (larry.cousin@huckabee-inc.com)

2021 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 SIDELIGHT/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		1½	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	2	Not Permitted	W-120
	1½		1½	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	1½	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 ⁱ	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	1½ ^k	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 ^l	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		1½	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 ⁹	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					≤100 sq. in. = D-H-60				

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-T-W-60	Not Permitted	1	Not Permitted	W-60	
					Fire protection				
Other fire barriers	1	3/4	Maximum size tested	D-H	3/4 ^h	D-H ^h			
Fire partitions: Corridor walls	1	1/3 ^a	Maximum size tested	D-20	3/4 ^a	D-H-OH-45			
	0.5	1/3 ^a	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	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. One door, with a fire protection rating of 3 hours, installed in a double fire wall, shall be deemed equivalent in fire protection to two 3-hour fire door, if door assembly and framing in the fire wall are independent of fire wall.

- k. One door, with a fire protection rating of 1 ½ hours, installed in a double fire wall, shall be deemed equivalent in fire protection to two 1 ½ -hour fire door, if door assembly and framing in the fire wall are independent of fire wall.
- l. One door, with a fire protection rating of 1 hour, installed in a double fire wall, shall be deemed equivalent in fire protection to two 1 -hour fire door, if door assembly and framing in the fire wall are independent of fire wall.

Reason Statement: Protecting a double fire wall has been a problem as two fire door assemblies cannot be in each wall simultaneous so a vestibule has to be created which the horizontal portion of the vestibule would not be considered a fire wall. These footnotes give another way to protect openings in fire wall so the horizontal assembly portion of the vestibule is not required. This "portal frame" is on an independent foundation from the fire wall and has an e.j. around the "portal frame" so it will be an independent structure in case the wall on either side falls.

Cost Impact: The code change proposal will decrease the cost of construction
This will decrease the cost of construction because it would required only one door assembly and independent structure in a double fire walls. Thus eliminated the cost of two door assemblies and the cost of the vestibule where the doors are installed.

FS79-21

IBC: 716.1.1

Proponents: William Koffel, representing Fire Safe North America (wkoffel@koffel.com)

2021 International Building Code

Revise as follows:

716.1.1 Alternative methods for determining fire protection ratings. The application of any of the alternative methods specified in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C. The required ~~fire resistance~~ fire protection rating of an opening protective shall be permitted to be established by any of the following methods or procedures:

1. Designs documented in *approved* sources.
2. Calculations performed in an *approved* manner.
3. Engineering analysis based on a comparison of opening protective designs having *fire protection ratings* as determined by the test procedures set forth in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C.
4. Alternative protection methods as allowed by Section 104.11.

Reason Statement: The paragraph currently uses the generic, defined term of "fire resistance." However, opening protectives are assigned a "fire protection rating." The test methods referenced in the paragraph are used to determine a "fire protection rating." The use of "fire resistance" causes confusion and people don't always understand the different performance characteristics associated with assemblies that have a "fire resistance rating" or a "fire protection rating."

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposed change simply clarifies the intent of existing code requirements. If anything, the cost of construction could be decreased by eliminating the confusion associated with the current code text.

FS79-21

FS80-21

IBC: 716.1.1

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

716.1.1 Alternative methods for determining fire protection ratings. The application of any of the alternative methods specified in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C. The required *fire resistance* of an opening protective shall be permitted to be established by any of the following methods or procedures:

1. Designs documented in *approved* sources.
2. ~~Calculations performed in an *approved* manner.~~
3. Engineering analysis based on a comparison of opening protective designs having *fire protection ratings* as determined by the test procedures set forth in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C.
4. Alternative protection methods as allowed by Section 104.11.

Reason Statement: There are no approved calculation methods for open protectives, published by competent sources we are aware of, that would yield a reliable determination of fire protection ratings for an open protective. While thermal transfer rates can be calculated in assemblies the results do not yield an equivalent fire protection rating.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction
There are no known calculation methods that can be used.

FS80-21

FS81-21

IBC: 716.2.2.1

Proponents: David Dodge, representing McKEON (ddodge@mckeondoor.com)

2021 International Building Code

Revise as follows:

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 or UL 10D without the hose stream test.*

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have not less than a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700° F (927° C).
2. *Corridor* door assemblies in occupancies of Group I-2 shall be in accordance with Section 407.3.1.
3. Unprotected openings shall be permitted for *corridors* in multitheater complexes where each motion picture auditorium has not fewer than one-half of its required *exit* or *exit access doorways* opening directly to the exterior or into an *exit passageway*.
4. Horizontal sliding doors in *smoke barriers* that comply with Sections 408.6 and 408.8.4 in occupancies in Group I-3.

Reason Statement: Section 716.2.2.1 allows door assemblies that do not complete a hose stream test to be used in applications where a minimum 20-minute opening protective fire rating is required. Since Section 716.4 confirms the fire protective curtain technology is tested without the hose stream, integrity test, in accordance with UL 10D, the maximum fire label that can be placed upon any of its applications is 20 minutes. This minor, somewhat editorial-type code change confirms UL10D is the same criteria as UL10C without the hose stream and specifically assigns fire protective curtains their rightful place in the IBC. This clarification confirms the intent of the scope statement in UL 10D as follows:

FIRE TESTS OF FIRE-PROTECTIVE CURTAIN ASSEMBLIES - UL 10D

INTRODUCTION

1 Scope

1.1 These requirements cover the evaluation of fire-protective curtain assemblies intended to provide supplemental, passive fire protection as part of an engineered fire protection system. Fire-protective curtain assemblies are horizontally or vertically oriented. Horizontally or vertically oriented fire-protective curtain assemblies provide nonstructural separation only, and are not intended to be substituted for structural hourly rated partitions or opening protectives that have been tested for fire endurance and hose stream performance.

The current language in Section 716.4, which allows for the use of fire protective curtains, is open to interpretation and potential over-reaching regarding specific applications as opening protectives. This concern was voiced at the final action hearings for the last cycle and it was suggested that corrections are definitely needed and could be made in this cycle. This code change addresses those concerns clarifying the intended use of the fire protective curtain technology as opening protectives rated not greater than 20 minutes without hose stream in accordance with UL 10D.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change is a clarification regarding compliance with a test standard.

FS81-21

FS82-21

IBC: 716.2.2.1

Proponents: Curtis Gonzales, Smoke Guard, Inc., representing Smoke Guard, Inc.; Amanda Hickman, The Hickman Group, representing SmokeGuard, Inc. (amanda@thehickmangroup.com)

2021 International Building Code

Revise as follows:

716.2.2.1 ~~Door~~ Opening protective assemblies in corridors and smoke barriers. *Fire door assemblies or fire protective curtain 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, or UL 10D.

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have not less than a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700° F (927° C).
2. *Corridor door assemblies* in occupancies of Group I-2 shall be in accordance with Section 407.3.1.
3. Unprotected openings shall be permitted for *corridors* in multitheater complexes where each motion picture auditorium has not fewer than one-half of its required *exit* or *exit access doorways* opening directly to the exterior or into an *exit passageway*.
4. Horizontal sliding doors in *smoke barriers* that comply with Sections 408.6 and 408.8.4 in occupancies in Group I-3.
5. *Fire protective curtain assemblies* shall be permitted for use when listed in accordance with UL 10D. The curtain shall be installed and maintained in accordance with NFPA 80.

Reason Statement: In the 2021 code cycle, UL 10D and the definition for *Fire Protective Curtain Assemblies* were added to the code. This proposal clarifies the common applications for *Fire Protective Curtain Assemblies*. "UL 10D Standard for Fire Tests of Fire-Protective Curtain Assemblies", Edition 2 is an ANSI approved standard for the listing of such Fire-Protective Curtain Assemblies. Fire Protection Curtains can and do serve many 20-minute fire protection applications in corridors and smoke barriers.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change proposal will not increase or decrease the cost of construction because it adds another option for code compliance.

FS82-21

FS83-21

IBC: 716.2.2.1, 1020.2.1; (IFC[BE] 1020.2.1)

Proponents: Mike Nugent, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org); Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Revise as follows:

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.*

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have not less than a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700° F (927° C).
2. Corridor door assemblies in occupancies of Group I-2 shall be in accordance with Section 407.3.1.
3. Unprotected openings shall be permitted for corridors in multitheater complexes where each motion picture auditorium has not fewer than one-half of its required exit or exit access doorways opening directly to the exterior or into an exit passageway.
4. Horizontal sliding doors in smoke barriers that comply with Sections 408.6 and 408.8.4 in occupancies in Group I-3.
5. In corridor walls required to have a fire-resistance rating in accordance with Section 1020.2, an elevator hoistway door opening directly into the corridor is not required to meet the smoke and draft control door assembly requirements in this section where the elevator connect 3 stories or less and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

1020.2.1 Hoistway opening protection. Elevator hoistway doors in elevators hoistway enclosures required to be fire resistance rated shall be protected in accordance with Section 716. Elevator hoistway doors openings shall also be protected in accordance with Section ~~3006.2.1~~ 3006.2.

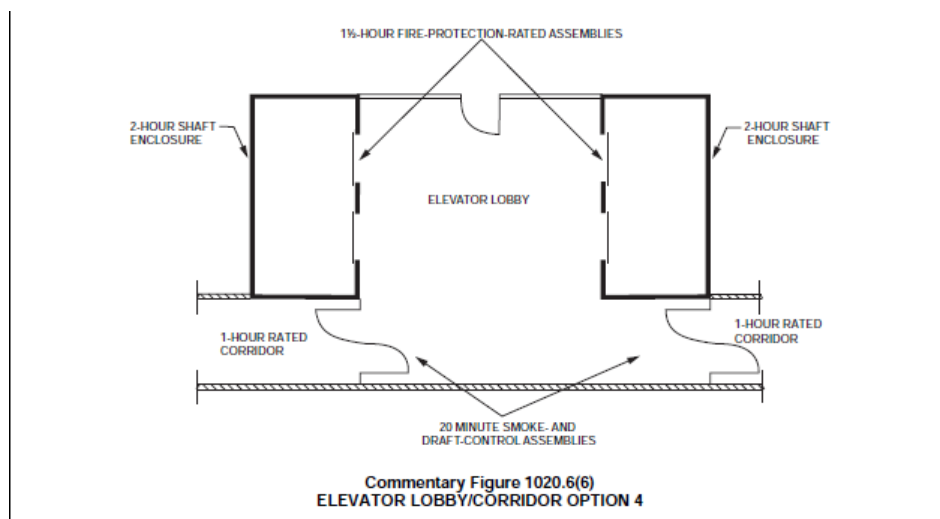
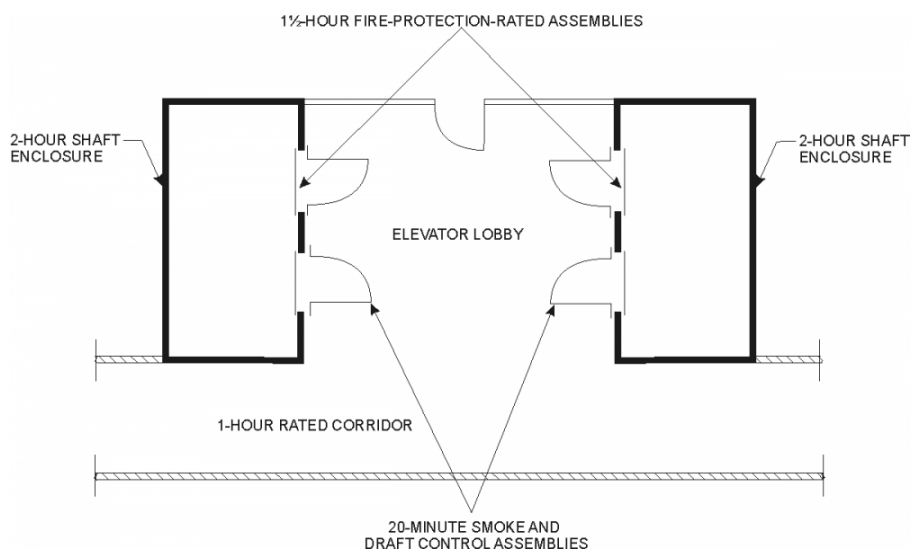
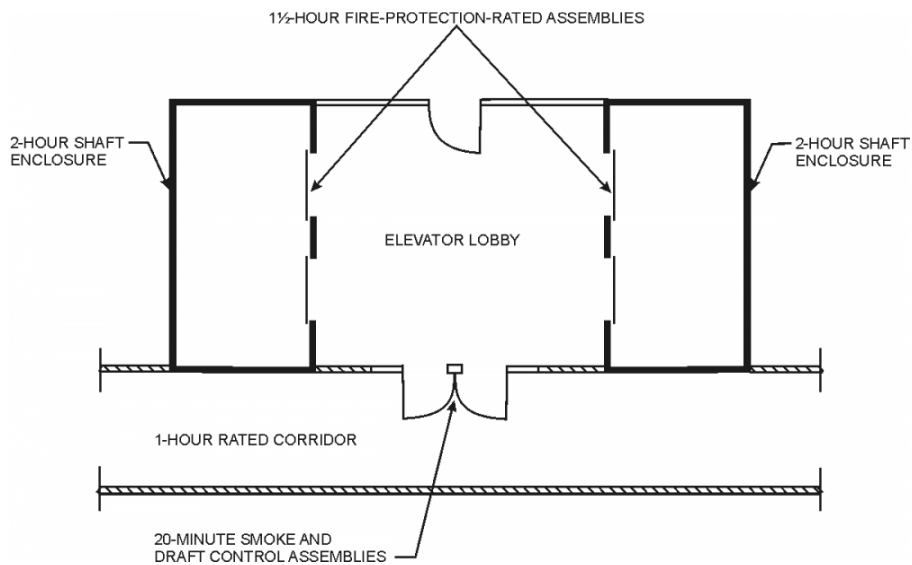
Reason Statement: The intent of this proposal is to allow for two and three story Group R and Group I-1 buildings that do not have to have elevator lobbies to not have smoke and draft control at the doors. Even with sprinklers, these buildings have fire resistance rated corridors. Elevators are within vertical shafts and are sent to fire barrier protection requirements in Section 712.1.1, 713.14 and 3002.1. Section 707.6 in fire barriers references Section 716 for opening protection of all openings, which would include door through the shaft to allows entrance into the elevator car. Elevator car doors often open directly into a rated corridor, so Section 716.2.2.1 is applicable to those elevator doors.

The new exception 5 in Section 716.2.2.1 is to allow for elevators in low rise building to not to have to meet the smoke and draft requirements of opening protectives in corridors. While many elevator hoistway/vertical shaft doors are tested and labeled for the 1-hour or 1 1/2-hour fire resistance rating (see Section 716.2.1), very few, if any of the doors typically sold in the United States will also meet the smoke and draft requirements (see Section 716.2.2.1.1) that would allow them to open directly into a fire-resistance-rated corridor.

Current text literally results in elevator lobbies or other protection in front of the elevator doors in all rated corridors. There would not be significant stack effect for the movement of smoke with this minimal allowance. The code currently allows other floor vertical openings in Sections 712 and 1019.3 for four stories, so how is the elevator shaft more of a hazard? This allowance would make these buildings then require elevator lobbies/elevator opening protect at the same point, thus coordinating Section 716 and 3006.

The pointer in Section 1020.2.1 is in recognition that elevator entrance doors in rated corridors have to meet both criteria.

Below are what is currently required in even 2 story building with rated corridors.



This proposal is submitted by the ICC Building Code Action Committee (BCAC) and ICC Fire 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 2020 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.

The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: FCAC.

Cost Impact: The code change proposal will decrease the cost of construction

This will be a decrease in some 2 and 3 story buildings. The shaft would need a fire resistant elevator entrance door, but would not require a lobby or other protection options to meet the smoke and draft control.

FS83-21

FS84-21

IBC: 716.2.2.1.1

Proponents: William Koffel, representing Fire Safe North America (wkoffel@koffel.com)

2021 International Building Code

Revise as follows:

716.2.2.1.1 Smoke and draft control. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 m³/s × m²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited. *Terminated stops* shall be prohibited on doors required by Section 405.4.3 to comply with Section 716.2.2.1 and prohibited on doors required by Item 3 of Section 3006.3, or Section 3007.6.3 or 3008.6.3 to comply with this section.

Exception: Elevator hoistway door openings protected in accordance with Section 3006.3.

Reason Statement: It is recognized that elevator doors themselves, at least current elevator door assemblies, are not able to meet the smoke- and draft-control assembly requirements. However, since its inception the IBC has required that such door openings into a fire resistance rated corridor or a smoke barrier meet smoke- and draft-control assembly requirements. This was clarified when Section 3006.2.1 was added to the 2018 Edition of the IBC, not as a new requirement; but rather as a clarification (G201-15). The Reason Statement for G201-15 read as follows:

Reason: During the 2012 cycle the CTC submitted a code change FS88-12 to clarify that it was not the intent to require protection of a hoistway opening in rated corridors. Instead, the elevator lobby requirements themselves addressed this issue. That proposal was not approved. Based upon that disapproval, it appears that it is within the intent to require protection of elevator hoistway openings based upon the requirement for rated corridor construction. Therefore, this requirement needs to be specifically clarified within Section 3006 to avoid the requirement being missed. A new section 3006.2.1 has been written to clarify that intent. Also, to further clarify this intent a Section 1020.1.1 has been provided as a pointer to these specific lobby requirements.

BCAC has submitted a proposal to delete Section 3006.2.1 and add the requirement to Section 3006.2. One of the supporting arguments offered by the proponents is that there is minimal stack effect in low-rise buildings. While there may be some truth to that statement, it fails to address the fact that the intent of the requirements in Chapters 7, 10, and 30 have been to also protect the corridor from a fire originating in the elevator hoistway. While most of the BCAC discussion focused on exit access corridors, it should be noted that this provision also impacts door openings in smoke barriers.

In theory, we support the BCAC proposal related to Section 3006.2.1 but only if the requirement to protect the openings in a corridor or smoke barrier is added to Chapter 7 or Chapter 10. The concerns are different and should be addressed in different sections of the IBC. Chapter 30 addresses the vertical migration of smoke in the hoistway. Chapters 7 and 10 address protecting a corridor and smoke barrier that is required to have a fire resistance rating. For most of the instances in which a fire resistance rated corridor is required, the building is not protected with an automatic sprinkler system. However, even in a building protected throughout with an automatic sprinkler system, the elevator hoistway is one area in which sprinkler protection is likely to be omitted. Does it make sense to require smoke- and draft-control assemblies on every other corridor door or smoke barrier door but then omit such a requirement from one of the few spaces that is not likely to be protected with sprinkler protection? If a door in a corridor or smoke barrier is provided to access a utility shaft, the door is required to meet smoke- and draft-control assembly requirements. However, if Section 3006.2.1 is not retained, or similar provisions are added to Chapter 7 as proposed herein, if an elevator is in the shaft the door is not required to meet smoke- and draft-control assembly requirements.

Project FAIL-SAFE, a project of the NASFM Fire Research & Education Foundation, included a phase of computer modeling that looked at the impact on fire behavior, occupant survivability, and structural resiliency in a Group R-2 occupancy, both with and without sprinkler protection. One of the conclusions of the modeling that was done by WPI was that the **"single largest impact on occupant egress survivability is compartmentation of smoke and multiple egress routes."**

In summary, the proposal does not change the requirements in the IBC, either the 2021 edition or prior editions. Instead it retains the current code requirements and clarifies that there are alternative means to ensure that the opening between an elevator hoistway and a fire resistance rated corridor or in a smoke barrier is protected in a manner equivalent to that required for all other openings into the corridor or smoke barrier.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal clarifies that there are alternative means to comply with current code provisions.

FS84-21

FS85-21

IBC: 716.2.6.1

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org); Marc Levitan, representing ICC 500 Storm Shelter Standard Committee (marc.levitan@nist.gov)

2021 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 *sleeping units* in Group R-1 shall be permitted without automatic- or *self-closing* devices.
2. The elevator car doors and the associated hoistway enclosure 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.
3. Fire doors required solely for compliance with ICC 500 shall not be required to be self-closing or automatic-closing.

Reason Statement: The ICC 500 *Standard for the Design and Construction of Storm Shelters* allows a room or area within a larger building to be designed as a storm shelter, and requires the walls separating the storm shelter from the remaining portions of the host building to be constructed as 2-hour fire barriers, even if the IBC does not require a 2 hour rating.

The 2020 edition of ICC 500 provided an exception to the requirement for door closers in the situation where the fire-resistance rated wall is only required to separate a storm shelter from a host building. Any doors in the wall would still have to be fire-rated, but they would not have to include self or automatic closers. In a situation where large numbers of people need to enter the shelter quickly, such as for a tornado warning, exempting these doors from closers would allow for a constant flow of occupants seeking shelter without being interrupted by the door closing whenever someone releases the door.

Once people have entered the shelter, all openings can be secured from the inside by the personnel responsible for operating the shelter, or if necessary, by shelter occupants. Once the shelter doors are closed, the openings in the fire-resistance rated walls would be protected. When the storm is over, no closers would also allow for a smoother flow for egress.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC) and the ICC 500 Development Committee.

The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: FCAC.

The ICC 500 (Standard for the Design and Construction of Storm Shelters) development committee has held several virtual meetings during the last two years to develop the 202) edition. In addition, there were numerous virtual Working Group meetings. All meetings included members of the committee as well as interested parties. Related documents and reports are posted on the ICC 500 website at ICC 500.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

Will not increase the cost of construction if anything it lowers the construction cost as the requirements for door closers are being reduced.

FS85-21

FS86-21

IBC: 717.2.1 (IMC 607.2.1)

Proponents: Tony Crimi, representing International Firestop Council

2021 International Building Code

Revise as follows:

717.2.1 Smoke control system. Where the installation of a *fire damper* will interfere with the operation of a required smoke control system in accordance with Section 909, ducts used to supply uncontaminated air shall be protected with a shaft enclosure in accordance with Section 713, or tested in accordance with ASTM E2816, with equal F and T ratings, or shall utilize other approved alternative protection. ~~shall be utilized.~~ Where mechanical systems including ducts and *dampers* utilized for normal building ventilation serve as part of the smoke control system, the expected performance of these systems in smoke control mode shall be addressed in the rational analysis required by Section 909.4.

Add new standard(s) as follows:

ASTM

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

ASTM E2816: Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM E2816 Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: This proposal adds the option to install tested and Listed pressurization ducts that supply uncontaminated air for stairwell pressurization to be enclosed with an ASTM E2816 tested system.

The ASTM standard evaluates the fire performance of metallic duct systems based on the same fire exposure, principles and criteria for fire-resistance rating that are defined in ASTM E119. The Standard has the ability to test the fire performance of HVAC ducts for both supply (pressurization) and return air, in the vertical and horizontal orientation, and includes the penetration firestop system installed. The fire performance of pressurization ducts are evaluated by both Condition A – Horizontal, and Condition B – Vertical, which are the test configurations appropriate for pressurization ducts.

The ASTM E2816 standard was developed to establish requirements for fire resistive enclosure systems applied to metallic HVAC ducts in order to provide a tested alternate to required fire-resistance-rated shafts. When pressurization ducts are used, the protection is installed continuously from the air handling equipment to the air inlet and outlet terminals, so the penetration firestop systems installed in these ASTM E2816 protected ducts are included as part of the tested Condition A and Condition B systems. There are several systems currently Listed and in use for these applications.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal adds an additional option, but does not remove any prior options.

FS86-21

FS87-21

IBC: 717.2.3 (IMC 607.2.3)

Proponents: Shaun Ray, Metal-Fab, Inc., representing Shaun Ray (shaunr@mtlfab.com)

2021 International Building Code

Revise as follows:

717.2.3 Static dampers. *Fire dampers and ceiling radiation dampers that are listed for use in static systems shall only be installed in heating, ventilation and air-conditioning systems that are automatically shut down in the event of a fire. See Section 717.6.2.1.2 for applicable exceptions.*

Reason Statement: Section 717.2.3 of the 2021 IBC refers to ceiling radiation dampers that listed as "static" shall be installed only in HVAC systems that are automatically shut down in the event of fire. Sec. 717.6.2.1.2 of the 2021 IBC provides "Exceptions" where static CRDs can be used in HVAC systems that are not designed or considered for shutdown in the event of fire. Due to the large jump in sections to get to these "Exceptions", added text to Sec. 717.2.3 is justified and therefore submitted for consideration.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Text revision is editorial only.

FS87-21

FS88-21

IBC: 717.2.4 (New) [IMC 607.2.4 (New)] , 717.2.4.1 (New) [IMC 607.4.1 (New)]

Proponents: William Koffel, representing Air Movement and Control Association (wkoffel@koffel.com)

2021 International Building Code

Add new text as follows:

717.2.4 Mechanical, electrical and plumbing controls. Mechanical, electrical and plumbing controls shall not be installed in air duct systems.

Exception: Controls shall be permitted to be installed in air duct systems only if the wiring is directly associated with the air distribution system. The wiring shall be as short as practicable.

717.2.4.1 Controls not permitted to be installed through dampers. Mechanical, electrical and plumbing controls shall not be installed through fire dampers, smoke dampers, combination fire/smoke dampers or ceiling radiation dampers unless otherwise permitted by the manufacturer and the listing.

Reason Statement:

There are instances in which wiring and/or cabling is run through fire dampers, smoke dampers, combination fire/smoke dampers, and ceiling radiation dampers, which can cause improper operation of the device during inspection and fire events. Adding the proposed language will prevent this occurrence, thereby increasing occupant safety and lowering building damage during a fire event.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal does not increase cost by adding materials or requirements. Alternative solutions would need to be used for instances where wiring is run through dampers, which might incur labor costs. However, this cost is justified since the full operation of these devices is paramount for increasing occupant safety and lowering building damage during a fire event.

FS88-21

FS89-21

IBC: 717.4.1; IMC: [BF] 607.4.1

Proponents: Joseph Sandman, Self, representing Self (josephs@fioptics.com)

International Mechanical Code

2021 International Building Code

Revise as follows:

717.4.1 Access. Fire

and *smoke dampers* shall be provided with an approved means of access ~~that is large enough~~ to permit inspection and maintenance of the *damper* and its operating parts. *Dampers* equipped with fusible links, internal operators, or both shall be provided with an access door that is not less than 12 inches (305 mm) square or provided with a removable duct section that functions without the use of tools.

2021 International Mechanical Code

Revise as follows:

[BF] 607.4.1 Access. Fire and smoke dampers shall be provided with an *approved* means of access ~~that is large enough~~ to permit inspection and maintenance of the damper and its operating parts. Dampers equipped with fusible links, internal operators or both shall be provided with an access door that is not less than 12 inches (305 mm) square or provided with a removable duct section that functions without the use of tools.

Reason Statement: The text "Large enough" was supposed to be removed from this code as part of the code committee recommendation (Thursday October 25 2018) for approval of M72-18 (607.4 Access and identification), William Koffel, representing Air Movement and Control Association submitted a public comment modifying the text of M72-18 and we believe the words "Large enough" was overlooked and not deleted as an error. Attached is the public hearing result showing the code committee request to remove the text "Large enough" from M72-18.

The new code 607.4 Access and identification, 607.4.1 Access, that allows for the use of a removable duct section for inspecting the smaller size fire and smoke damper is a valuable asset to our industry for inspecting and maintaining these smaller dampers. To further assist the fire life safety technician with their damper inspections we feel the technician should be able to freely remove and reinstall the removable duct section without the use of tools, rather than spending valuable time removing and reinstalling fasteners such as bolts, nuts or screws. We also feel the first responders "Fire Fighters" would benefit with a quick released removable duct section in an emergency or for their inspections. Removable ductwork sections should be provided with hand operated latches, clamps or quick release fasteners. Attached are pictures showing one type of rectangular removable duct section that utilizes draw latches in lieu of mechanical fasteners. This type of removable duct section can be removed and reinstalled without the use of tools very quickly and easily. Also, The State of California mechanical code has the same requirements that I am proposing to access fire and smoke dampers without the use of tools as follows, California mechanical code 605.5 Access and Identification, Access shall not require the use of tools.

Thank you for your time, our sheet metal industry and fire life safety technicians hope that you see the importance and benefits for having removable duct sections that can be removed and reinstalled without the use of tools, quickly and easy.





Cost Impact: The code change proposal will not increase or decrease the cost of construction
The code change proposal will not increase or decrease the cost of construction. The proposed change will reduce the time for inspecting and servicing fire dampers by 50%.

FS89-21

FS90-21

IBC: 717.5.3 (IMC 607.5.5)

Proponents: Raymond Grill, Ray Grill Consulting PLLC, representing Self (ray@raygrillconsulting.com)

2021 International Building Code

Revise as follows:

717.5.3 Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with *listed* fire and *smoke dampers* installed in accordance with their listing.

Exceptions:

1. *Fire dampers* are not required at penetrations of shafts where any of the following criteria are met:
 - 1.1. Steel exhaust subducts having a wall thickness of not less than 0.0187 inch (0.4712 mm) are extended not less than 22 inches (559 mm) vertically in exhaust shafts, and an exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with Section 909.11, so as to maintain a continuous upward airflow to the outdoors.
 - 1.2. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
 - 1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 and where the fire damper will interfere with the operation of the smoke control system.
 - 1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In ~~Group B and R~~ occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts ~~where all of the following criteria are met:~~
 - 2.1. ~~Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a wall thickness of not less than 0.0187 inch (0.4712 mm).~~
 - 2.2. ~~The subducts extend not less than 22 inches (559 mm) vertically.~~
 - 2.3. ~~An exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outdoors.~~
3. *Smoke dampers* are not required at penetration of exhaust or supply *shafts* in parking garages that are separated from other building *shafts* by not less than 2-hour fire-resistance-rated construction.
4. *Smoke dampers* are not required at penetrations of *shafts* where ducts are used as part of an *approved mechanical* smoke control system designed in accordance with Section 909 and where the *smoke damper* will interfere with the operation of the smoke control system.
5. *Fire dampers* and *combination fire/smoke dampers* are not required in kitchen and clothes dryer exhaust systems where *dampers* are prohibited by the *International Mechanical Code*.

Reason Statement: The requirement for smoke dampers at penetrations in shafts was first included in the IBC during the comment phase of the development of the first edition of the International Building Code. This requirement did not exist in any of the model building codes (BOCA, UBC & SBC). A requirement for smoke dampers at penetrations of shafts has never been incorporated in the NFPA system of codes.

The justification for smoke dampers in the original code change is that smoke can travel through a duct to locations in a building that are remote from the fire. While this statement is correct, smoke travel through ducted ventilation shafts has not been a contributing factor to fire spread or fire deaths in buildings. Smoke detectors at HVAC equipment have been required to accomplish automatic shut off of HVAC equipment to minimize the potential of smoke spread through ventilation ducts. For example, the majority of fire deaths in upper stories of the MGM grand fire of 1980 were due to smoke spread through stair shafts and seismic joints that were not protected. Fan coil units in guestrooms drew air from the corridors which also contributed to fatalities. While the HVAC system was cited as a potential source of smoke spread, smoke detectors were not present to provide automatic shutoff of equipment (NFPA Preliminary Report of the MGM Grand Hotel Fire). The MGM Grand was not sprinkler protected.

There was only one fatality in an upper story of the San Juan DuPont fire in 1986 which was not readily explained. The San Juan Dupont was not sprinkler protected. Smoke travel through ventilation shafts was not a contributing factor in the First Interstate fire in Los Angeles or the Meridian fire in Philadelphia. Sprinklers were not active on fire floors in either of those buildings. Even in the World Trade Center bombing of 1993, 6 fatalities were attributed to the explosion, but there were no fatalities due to the effects of smoke (Isner, Michael S. and Klem, Thomas J., "World Trade Center Explosion and Fire," National Fire Protection Association). While these fires were thoroughly investigated, and code changes promulgated to address fire safety issues, smoke dampers in duct penetrations of shafts were never adopted as changes to any of the model codes as a result of these fires.

The original code change in the IBC did not present any technical substantiation for the additional requirement for smoke dampers and there has never been an instance that I am aware of where the provision of smoke dampers in shafts would have made a difference in the fire performance of a fully sprinklered building.

This requirement has been massaged based on negotiation with manufactures and building ownership groups over the past code cycles because it has always been difficult to implement. The requirement for smoke dampers at penetrations of shafts should be removed for fully sprinklered buildings.

There have been jurisdictions and federal agencies that have never adopted the smoke damper requirement for sprinklered buildings. There have not been any incidences reported to show a need for smoke dampers. Agencies include the General Services Administration, Department of Veteran Affairs, and Department of Defense. These agencies own and operate buildings that include all of the occupancy types addressed by the IBC. Smoke dampers are not required in shaft penetrations in their buildings.

Performance of Fully Sprinklered Buildings

It is important to note that the IBC requires sprinkler protection for most buildings of any significant size or occupant load. Therefore, the performance of sprinklered buildings is relevant. There has never been a multiple life loss fire in a fully sprinklered building of any occupancy type where the occupants have not been intimate with the fire or where an explosive or terrorist event has occurred.

Fire incidents in fully sprinklered buildings have never been identified to demonstrate the need for smoke dampers at shaft penetrations..

Maintaining Operability

Smoke dampers are operated by either a pneumatic actuator or electric motor. Smoke dampers require regular testing and maintenance to keep them operating. Even the most diligent building owners have a difficult time maintaining operability of smoke dampers.

Sustainability

There is a significant amount of resources that go into the implementation of smoke dampers at shaft penetrations. There has not been a demonstrated value to property protection or life safety in fully sprinklered buildings to justify their need.

Cost Impact: The code change proposal will decrease the cost of construction

This code change will significantly reduce the cost of construction. A rough installed cost estimate for the smoke dampers and associated required equipment can range from \$2000-\$3000 per damper or even more for large dampers. This does not include the ongoing cost of testing the dampers and detectors that are required to operate the dampers. Regular testing is also required at regular frequencies. Testing costs per damper can vary depending on the number of dampers being tested and the accessibility and complexity of the system.

FS91-21

IBC: 717.6 (IMC 607.6), 717.6.1 (IMC 607.6.1), 717.6.2 (New) [IMC 607.6.2 (New)]

Proponents: John Williams, Chair, representing Healthcare Committee (ahc@iccsafe.org); James Peterkin, representing TLC Engineering Solutions (jim.peterkin@tlc-eng.com)

2021 International Building Code

717.6 Horizontal assemblies. Penetrations by ducts and air transfer openings of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected by a shaft enclosure that complies with Section 713 or shall comply with Sections 717.6.1 through 717.6.3.

717.6.1 Through penetrations. In occupancies other than Groups I-2 and I-3, 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.

Exception: 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. 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. 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. 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 m²) in any 100 square feet (9.3 m²) of floor area.
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 (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. 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.

Add new text as follows:

717.6.2 Through penetration for Group I-2 and I-3. In Group I-2 and I-3 occupancies a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates a fire-resistance-rated floor of 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.

Reason Statement: It does not make any sense to provide a shaft with a damper into the shaft and a damper out of the shaft when it only penetrates one floor. This is consistent with the federal certification requirements for the Centers for Medicaid and Medicare Services (e.g. NFPA 101 and NFPA 99).

This proposal is submitted by the ICC Committee on Healthcare (CHC) for Group I-2 in cooperation with Jim Peterkin for Group I-3.

The CHC was established by the ICC Board to evaluate and assess contemporary code issues relating to healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. In 2020 the CHC held several virtual meetings, which included members of the committees as well as any interested parties, to discuss and debate the proposed changes. Information on the CHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CHC effort can be downloaded from the CHC website at CHC.

Cost Impact: The code change proposal will decrease the cost of construction

The code change proposal will slightly decrease the cost of construction, because it eliminates a second damper and minimal shaft construction.

FS91-21

FS92-21

IBC: 717.6.2.1.2 (IMC 607.6.2.1.2)

Proponents: Shaun Ray, representing Shaun Ray (shaunr@mtlfab.com)

2021 International Building Code

Revise as follows:

717.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall be provided with static floor/ceiling and ceiling/roof designs classified for heat, ventilation and air-conditioning systems that 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 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.

Reason Statement: The proposed change to Sec. 717.6.2.1.2 is editorial in nature. The intent of the change is to clarify that static ceiling radiation dampers are to be installed in UL classified floor/ceiling and ceiling/roof designs that are tested and classified as "static" (tested only with no airflow through ducting for the entire fire exposure test). More recently, UL has tested and classified "dynamic" floor/ceilings and ceiling/roof systems that can now be available to the construction market.

The word "systems" in this section is possibly too vague. This proposed change is offered to clarify that the horizontal membrane is a "static" design that is intertwined in the HVAC system. The revised wording provides the needed clarity for the subject matter.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposed change is editorial in nature and intended to clarify the current code intent.

FS92-21

FS93-21

IBC: 717.6.2.1.2 (IMC 607.6.2.1.2)

Proponents: William Koffel, representing Air Movement and Control Association (wkoffel@koffel.com)

2021 International Building Code

Revise as follows:

717.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall be provided with systems that 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 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 2. 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.

Reason Statement: Exception 2 does not make sense because the exception implies that the dampers are motor-driven, which they are not. Static ceiling radiation dampers are not really able to be effectively controlled by the smoke detection system. Static ceiling radiation dampers have no provision in UL 555C or UL 263 that makes them compatible with any kind of wiring, unless perhaps by a switch (which is impractical). Thus, the exception does not really apply and should be removed for technical accuracy.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

There is no added cost to this proposal, since it is just clarifying technical capabilities of existing equipment as detailed in this section.

FS93-21

FS94-21

IBC: 717.6.2.1.2 (IMC 607.6.2.1.2)

Proponents: Eirene Knott, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com)

2021 International Building Code

Revise as follows:

717.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall be provided with systems that 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 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 when the room is vacant.

Reason Statement: As the original proponent of the language that was added to the 2021 to allow for the occupant sensor to be used in conjunction of the damper, my original intention was require the system to shut down by the sensor when the room was vacant. The 2021 language may not clearly indicate that, thus the proposed language. The intention is for the system to shut down by the occupant sensor when the room is vacant.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is for clarification purposes only.

FS94-21

FS95-21

IBC: 717.6.2.1.2 (IMC 607.6.2.1.2)

Proponents: Shaun Ray, representing Shaun Ray (shaunr@mtlfab.com)

2021 International Building Code

Revise as follows:

717.6.2.1.2 Static systems. Static *ceiling radiation dampers* shall be provided with systems that 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 in the duct shall be within 5 feet (1524 mm) of each static ceiling radiation damper installed in the system. Air outlets and inlets shall not be located between the detector or tubes and the damper. ~~Each~~ 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.
3. Static radiation dampers shall be allowed for installation in systems that can possibly continue operation during a fire, provided a thermal control switch is used at or within 1 foot (305 mm) of each static ceiling damper. The thermal control switch shall be listed, provide a resettable feature and be accessible for inspection and service. The thermal control switch shall be tested/evaluated for the maximum air velocity and temperature of the system design and shall be independent of the activation of static ceiling dampers during a fire. Each thermal control switch is to be connected to activate fan shutdown when elevated temperature is detected at any static ceiling damper location within the system.
4. For control switches and sensing devices noted in these exceptions, information shall be provided at the air handler for heat, ventilation and air-conditioning service and repair technicians stating that shutdown devices are present in the system. Further instruction regarding installation, inspection and repair of such devices shall be provided by the manufacturer.

Reason Statement: It is known that the large majority of floor/ceiling designs used for residential construction are tested under static (no airflow) conditions during fire exposure. Where system design does not take into account the requirement for dynamic ceiling designs (which include dynamic ceiling dampers), or in cases where a dynamic ceiling design does not exist for the application, workaround solutions have been used. In some jurisdictions, a single thermal sensing switch has been allowed to address the requirement of fan shutdown in the event of a fire. The use of a single thermal switch (typically located near the return or supply duct connected at the furnace or air handler) is not adequate protection in the event of a fire. In multi-room residential construction, a fire could originate in a room on a separate floor and could be three, four, five or more rooms separated from the room or closet that the furnace fan resides. Static ceiling designs are tested with zero airflow at the start of a fire exposure. These ceilings are tested with substantial loading on the floor, which in some instances results in ceiling collapse very soon after the rated exposure (such as 1-hour fire rated) has concluded. It has been long understood that UL testing of such floors that have not been evaluated for conditions that allow a fan to operate at the beginning of a fire should require some control means to cease fan operation once a fire is detected in the room that the rated floor/ceiling is exposed. However, code language does not specifically state that thermal or smoke detection at the air handler alone is adequate (or inadequate) coverage to ensure that static ceiling designs indeed only see a fire exposure without airflow during the start of a fire.

Furthermore, a static ceiling damper is not tested/evaluated to endure the physical shock that may occur during activation under a dynamic condition. In other words, a damper might be damaged if it closes while airflow is still present. If this happens, the damaged ceiling damper cannot continue to provide its listed performance expectations even if the furnace fan is shut down soon after the static ceiling damper activates (closes). It is not a stretch to consider that a static ceiling damper located in a room one or more floors or multiple rooms away from the furnace will activate during a fire in that room prior to a sensor located at the supply duct near the furnace detects a rise in temperature adequate enough to shut down the fan.

The minor wording change proposed in Exception 1 ensures that the code's intention is that a protection device (smoke detector) is used for each static ceiling damper installed. Current language could be interpreted as requiring just one smoke detector for one static ceiling damper per system even though multiple static ceiling dampers are likely used in the entire system. The added wording is intended to clarify the code's intent.

Exception 2 specifies use of static ceiling radiation dampers that have a provision to allow a smoke detector to control the damper (interpreted as being able to "close" a static ceiling radiation damper). Such ceiling radiation dampers are rare (and likely costly). Due to the rarity of the possible

application/solution, the inclusion of this exception probably provides more confusion than resolution.

Exception 3 is also a limited application. Bathrooms that have motion sensing that turns on lights and exhaust fans as a person enters the room, comes to mind. When no one is occupying the room, the exhaust fan shuts down. In such applications, a static ceiling radiation damper could be a suitable solution. However, the wording “when unoccupied” is added to clarify when a fan system would be shut down regardless of a fire or not. This exception could also be applied to ceiling damper/exhaust fan combinations that are currently on the market and have been tested in a static ceiling design for use where the fan is in operation during the start of a fire. Testing such as this establishes precedence that testing/listing laboratories take into account that a damper could become damaged if closure occurs before a fan can be completely shut down. Devices tested and listed are intended for applications such as used for a bathroom exhaust and are independent of the HVAC system in a building.

New Exception 4 is added to clarify comments made earlier in this justification. Simply providing a heat sensing device at or near the furnace that is intended to shut down the fan during a fire does not adequately address concerns that could arise from such practices. Exception 4 is a means to improve on what is currently intended in the 2021 IMC.

Since it is possible that nuisance tripping may occur from protective sensing devices installed within the HVAC system, an exception note (New note 5) should be included to allow service technicians to be made aware that fan shutdown could be a result of a sensing device that has provided a change in control signal to the furnace/air handler. This label or other means of notification located at the furnace would be provided so that the technician is not wasting hours of time trouble shooting a service call related to a furnace that is not operating as expected.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposed changes and new additions to Sec. 607.6.2.1.2 are intended to clarify the current intent of the code. Inclusion of control switches such as a thermostat switch could be less expensive when compared to smoke detection sensing elements and ceiling dampers that allow the ability to be closed upon a fan shutdown, which are currently prescribed in this section of the code.

FS96-21

IBC: 718.2.1

Proponents: Christopher Athari, Hoover Treated Wood Products, representing Hoover Treated Wood Products (cathari@ftrw.com)

2021 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 IBC Section 2303.2.

Reason Statement: Referencing the data in IBC table 722.6.2(1), one-half-inch gypsum board and 19/32-inch wood structural panel membranes have the same fire resistance. It is common practice to substitute FRTW structural panels for untreated wood structural panels. One thickness of 19/32-inch FRTW structural panel has the same fire resistance as one thickness of 19/32-inch untreated wood structural panel. One-half-inch gypsum board has a flame spread rating of 25 or less, and FRTW complying with IBC Section 2303.2 has a flame spread rating of 25 or less. Therefore, one thickness of 19/32-inch FRTW structural panel demonstrates both the equivalent fire resistance and flame spread properties of one-half-inch gypsum board.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The other 9 options remain unchanged and may be chosen as they were. This adds one more option.

FS96-21

FS97-21 Part I

IBC: TABLE 721.1(2), FIGURE 722.5.1(2)

Proponents: Mike Nugent, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org); Michael O'Brian, representing FCAC (fcac@iccsafe.org)

THIS IS A 3 PART CODE CHANGE. PART I WILL BE HEARD BY THE FIRE SAFETY CODE COMMITTEE. PART II WILL BE HEARD BY THE FIRE CODE COMMITTEE. PART III WILL BE HEARD BY THE PROPERTY MAINTENANCE/ZONING CODE COMMITTEE. COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

2021 International Building Code

Revise as follows:

TABLE 721.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS^{a, o, p}

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE ^b (inches)			
			4 hours	3 hours	2 hours	1 hour
1. Brick of clay or shale	1-1.1	Solid brick of clay or shale. ^c	6	4.9	3.8	2.7
	1-1.2	Hollow brick, not filled.	5.0	4.3	3.4	2.3
	1-1.3	Hollow brick unit wall, grout or filled with perlite vermiculite or expanded shale aggregate.	6.6	5.5	4.4	3.0
	1-2.1	4" nominal thick units not less than 75 percent solid backed with a hat-shaped metal furring channel ³ / ₄ " thick formed from 0.021" sheet metal attached to the brick wall on 24" centers with approved fasteners, and ¹ / ₂ " Type X gypsum wallboard attached to the metal furring strips with 1"-long Type S screws spaced 8" on center.	—	—	5 ^d	—
2. Combination of clay brick and load-bearing hollow clay tile	2-1.1	4" solid brick and 4" tile (not less than 40 percent solid).	—	8	—	—
	2-1.2	4" solid brick and 8" tile (not less than 40 percent solid).	12	—	—	—
3. Concrete masonry units	3-1.1 ^{f, g}	Expanded slag or pumice.	4.7	4.0	3.2	2.1
	3-1.2 ^{f, g}	Expanded clay, shale or slate.	5.1	4.4	3.6	2.6
	3-1.3 ^f	Limestone, cinders or air-cooled slag.	5.9	5.0	4.0	2.7
	3-1.4 ^{f, g}	Calcareous or siliceous gravel.	6.2	5.3	4.2	2.8
4. Solid concrete ^{h, i}	4-1.1	Siliceous aggregate concrete.	7.0	6.2	5.0	3.5
		Carbonate aggregate concrete.	6.6	5.7	4.6	3.2
		Sand-lightweight concrete.	5.4	4.6	3.8	2.7
		Lightweight concrete.	5.1	4.4	3.6	2.5
5. Glazed or unglazed facing tile, nonload-bearing	5-1.1	One 2" unit cored 15 percent maximum and one 4" unit cored 25 percent maximum with ³ / ₄ " mortar-filled collar joint. Unit positions reversed in alternate courses.	—	6 ³ / ₈	—	—
	5-1.2	One 2" unit cored 15 percent maximum and one 4" unit cored 40 percent maximum with ³ / ₄ " mortar-filled collar joint. Unit positions side with ³ / ₄ " gypsum plaster. Two wythes tied together every fourth course with No. 22 gage corrugated metal ties.	—	6 ³ / ₄	—	—
	5-1.3	One unit with three cells in wall thickness, cored 29 percent maximum.	—	—	6	—
	5-1.4	One 2" unit cored 22 percent maximum and one 4" unit cored 41 percent maximum with ¹ / ₄ " mortar-filled collar joint. Two wythes tied together every third course with 0.030"(No. 22 galvanized sheet steel gage) corrugated metal ties.	—	—	6	—
	5-1.5	One 4" unit cored 25 percent maximum with ³ / ₄ " gypsum plaster on one side.	—	—	4 ³ / ₄	—
	5-1.6	One 4" unit with two cells in wall thickness, cored 22 percent maximum.	—	—	—	4
	5-1.7	One 4" unit cored 30 percent maximum with ³ / ₄ " vermiculite gypsum plaster on one side.	—	—	4 ¹ / ₂	—
	5-1.8	One 4" unit cored 39 percent maximum with ³ / ₄ " gypsum plaster on one side.	—	—	—	4 ¹ / ₂
6. Solid gypsum plaster	6-1.1	³ / ₄ " by 0.055" (No. 16 carbon sheet steel gage) vertical cold-rolled channels, 16" on center with 2.6-pound flat metal lath applied to one face and tied with 0.049" (No. 18 B.W. gage) wire at 6" spacing. Gypsum plaster each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	2 ^d
	6-1.2	³ / ₄ " by 0.05" (No. 16 carbon sheet steel gage) cold-rolled channels 16" on center with metal lath applied to one face and tied with 0.049" (No. 18 B.W. gage) wire at 6" spacing. Perlite or vermiculite gypsum plaster each side. For three-coat work, the plaster mix for the second coat shall not exceed 100 pounds of gypsum to 2 ¹ / ₂ cubic feet of aggregate for the 1-hour system.	—	—	2 ¹ / ₂ ^d	2 ^d
	6-1.3	³ / ₄ " by 0.055" (No. 16 carbon sheet steel gage) vertical cold-rolled channels, 16" on center with ³ / ₈ " gypsum lath applied to one face and attached with sheet metal clips. Gypsum plaster each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	2 ^d
		Studless with ¹ / ₂ " full-length plain gypsum lath and gypsum plaster each side. Plaster				

	6-2.1	mixed 1:1 for scratch coat and 1:2 for brown coat, by weight, gypsum to sand aggregate.	—	—	—	2 ^d
	6-2.2	Studless with 1/2" full-length plain gypsum lath and perlite or vermiculite gypsum plaster each side.	—	—	2 1/2 ^d	2 ^d
	6-2.3	Studless partition with 3/8" rib metal lath installed vertically adjacent edges tied 6" on center with No. 18 gage wire ties, gypsum plaster each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	2 ^d
7. Solid perlite and Portland cement	7-1.1	Perlite mixed in the ratio of 3 cubic feet to 100 pounds of Portland cement and machine applied to stud side of 1 1/2" mesh by 0.058-inch (No. 17 B.W. gage) paper-backed woven wire fabric lath wire-tied to 4"-deep steel trussed wire studs 16" on center. Wire ties of 0.049" (No. 18 B.W. gage) galvanized steel wire 6" on center vertically.	—	—	3 1/8 ^d	—
8. Solid neat wood fibered gypsum plaster	8-1.1	3/4" by 0.055-inch (No. 16 carbon sheet steel gage) cold-rolled channels, 12" on center with 2.5-pound flat metal lath applied to one face and tied with 0.049" (No. 18 B.W.gage) wire at 6" spacing. Neat gypsum plaster applied each side.	—	—	2 ^d	—
9. Solid wallboard partition	9-1.1	One full-length layer 1/2" Type X gypsum wallboard ^e laminated to each side of 1" full-length V-edge gypsum coreboard with approved laminating compound. Vertical joints of face layer and coreboard staggered not less than 3".	—	—	2 ^d	—
10. Hollow (studless) gypsum wallboard partition	10-1.1	One full-length layer of 5/8" Type X gypsum wallboard ^e attached to both sides of wood or metal top and bottom runners laminated to each side of 1" x 6" full-length gypsum coreboard ribs spaced 2" on center with approved laminating compound. Ribs centered at vertical joints of face plies and joints staggered 24" in opposing faces. Ribs may <u>shall be permitted to</u> be recessed 6" from the top and bottom.	—	—	—	2 1/4 ^d
	10-1.2	1" regular gypsum V-edge full-length backing board attached to both sides of wood or metal top and bottom runners with nails or 1 5/8" drywall screws at 24" on center. Minimum width of runners 1 5/8". Face layer of 1/2" regular full-length gypsum wallboard laminated to outer faces of backing board with approved laminating compound.	—	—	4 5/8 ^d	—
11. Noncombustible studs—interior partition with plaster each side	11-1.1	3 1/4" x 0.044" (No. 18 carbon sheet steel gage) steel studs spaced 24" on center. 5/8" gypsum plaster on metal lath each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	4 3/4 ^d
	11-1.2	3 3/8" x 0.055" (No. 16 carbon sheet steel gage) approved nailable ^k studs spaced 24" on center. 5/8" neat gypsum wood-fibered plaster each side over 3/8" rib metal lath nailed to studs with 6d common nails, 8" on center. Nails driven 1 1/4" and bent over.	—	—	5 5/8	—
	11-1.3	4" x 0.044" (No. 18 carbon sheet steel gage) channel-shaped steel studs at 16" on center. On each side approved resilient clips pressed onto stud flange at 16" vertical spacing, 1/4" pencil rods snapped into or wire tied onto outer loop of clips, metal lath wire-tied to pencil rods at 6" intervals, 1" perlite gypsum plaster, each side.	—	7 5/8 ^d	—	—
	11-1.4	2 1/2" x 0.044" (No. 18 carbon sheet steel gage) steel studs spaced 16" on center. Wood fibered gypsum plaster mixed 1:1 by weight gypsum to sand aggregate applied on 3/4"-pound metal lath wire tied to studs, each side. 3/4" plaster applied over each face, including finish coat.	—	—	4 1/4 ^d	—
12. Wood studs—interior partition with plaster each side	12-1.1 ^{l, m}	2" x 4" wood studs 16" on center with 5/8" gypsum plaster on metal lath. Lath attached by 4d common nails bent over or No. 14 gage by 1 1/4" by 3/4" crown width staples spaced 6" on center. Plaster mixed 1:1 1/2 for scratch coat and 1:3 for brown coat, by weight, gypsum to sand aggregate.	—	—	—	5 1/8
	12-1.2 ^l	2" x 4" wood studs 16" on center with metal lath and 7/8" neat wood-fibered gypsum plaster each side. Lath attached by 6d common nails, 7" on center. Nails driven 1 1/4" and bent over.	—	—	5 1/2 ^d	—
	12-1.3 ^l	2" x 4" wood studs 16" on center with 3/8" perforated or plain gypsum lath and 1/2" gypsum plaster each side. Lath nailed with 1 1/8" by No. 13 gage by 19/64" head plasterboard blued nails, 4" on center. Plaster mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	5 1/4
	12-1.4 ^l	2" x 4" wood studs 16" on center with 3/8" Type X gypsum lath and 1/2" gypsum plaster each side. Lath nailed with 1 1/8" by No. 13 gage by 19/64" head plasterboard blued nails, 5" on center. Plaster mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	5 1/4
	12-1.4	0.018" (No. 25 carbon sheet steel gage) channel-shaped studs 24" on center with one full-length layer of 5/8" Type X gypsum wallboard ^e applied vertically attached with 1"-long No. 6 dry wall screws to each stud. Screws are 8" on center around the perimeter and 12" on center on the intermediate stud. Where applied horizontally, the Type X gypsum				6 7/8 ^d

13. Noncombustible studs—interior partition with gypsum wallboard each side	13-1.1	12" on center on the intermediate stud. Where applied horizontally, the Type X gypsum wallboard shall be attached to 3 ⁵ / ₈ " studs and the horizontal joints shall be staggered with those on the opposite side. Screws for the horizontal application shall be 8" on center at vertical edges and 12" on center at intermediate studs.	—	—	—	2 ¹ / ₈ "
	13-1.2	0.018" (No. 25 carbon sheet steel gage) channel-shaped studs 25" on center with two full-length layers of 1/2" Type X gypsum wallboard ^e applied vertically each side. First layer attached with 1"-long, No. 6 drywall screws, 8" on center around the perimeter and 12" on center on the intermediate stud. Second layer applied with vertical joints offset one stud space from first layer using 1 ⁵ / ₈ " long, No. 6 drywall screws spaced 9" on center along vertical joints, 12" on center at intermediate studs and 24" on center along top and bottom runners.	—	—	3 ⁵ / ₈ " ^d	—
	13-1.3	0.055" (No. 16 carbon sheet steel gage) approved nailable metal studs ^e 24" on center with full-length 5/8" Type X gypsum wallboard ^e applied vertically and nailed 7" on center with 6d cement-coated common nails. Approved metal fastener grips used with nails at vertical butt joints along studs.	—	—	—	4 ⁷ / ₈ "
14. Wood studs—interior partition with gypsum wallboard each side	14-1.1 ^{h, m}	2" x 4" wood studs 16" on center with two layers of 3/8" regular gypsum wallboard ^e each side, 4d cooler ⁿ or wallboard ⁿ nails at 8" on center first layer, 5d cooler ⁿ or wallboard ⁿ nails at 8" on center second layer with laminating compound between layers, joints staggered. First layer applied full length vertically, second layer applied horizontally or vertically.	—	—	—	5
	14-1.2 ^{l, m}	2" x 4" wood studs 16" on center with two layers 1/2" regular gypsum wallboard ^e applied vertically or horizontally each side ^k , joints staggered. Nail base layer with 5d cooler ⁿ or wallboard ⁿ nails at 8" on center face layer with 8d cooler ⁿ or wallboard ⁿ nails at 8" on center.	—	—	—	5 ¹ / ₂ "
	14-1.3 ^{l, m}	2" x 4" wood studs 24" on center with 5/8" Type X gypsum wallboard ^e applied vertically or horizontally nailed with 6d cooler ⁿ or wallboard ⁿ nails at 7" on center with end joints on nailing members. Stagger joints each side.	—	—	—	4 ³ / ₄ "
	14-1.4 ^l	2" x 4" fire-retardant-treated wood studs spaced 24" on center with one layer of 5/8" Type X gypsum wallboard ^e applied with face paper grain (long dimension) parallel to studs. Wallboard attached with 6d cooler ⁿ or wallboard ⁿ nails at 7" on center.	—	—	—	4 ³ / ₄ " ^d
	14-1.5 ^{l, m}	2" x 4" wood studs 16" on center with two layers 5/8" Type X gypsum wallboard ^e each side. Base layers applied vertically and nailed with 6d cooler ⁿ or wallboard ⁿ nails at 9" on center. Face layer applied vertically or horizontally and nailed with 8d cooler ⁿ or wallboard ⁿ nails at 7" on center. For nail-adhesive application, base layers are nailed 6" on center. Face layers applied with coating of approved wallboard adhesive and nailed 12" on center.	—	—	6	—
	14-1.6 ^l	2" x 3" fire-retardant-treated wood studs spaced 24" on center with one layer of 5/8" Type X gypsum wallboard ^e applied with face paper grain (long dimension) at right angles to studs. Wallboard attached with 6d cement-coated box nails spaced 7" on center.	—	—	—	3 ⁵ / ₈ " ^d
	15-1.1 ^{l, m}	Exterior surface with 3/4" drop siding over 1/2" gypsum sheathing on 2" x 4" wood studs at 16" on center, interior surface treatment as required for 1-hour-rated exterior or interior 2" x 4" wood stud partitions. Gypsum sheathing nailed with 1 ³ / ₄ " by No.11 gage by 7/16" head galvanized nails at 8" on center. Siding nailed with 7d galvanized smooth box nails.	—	—	—	Varies
15-1.2 ^{l, m}	2" x 4" wood studs 16" on center with metal lath and 3/4" cement plaster on each side. Lath attached with 6d common nails 7" on center driven to 1" minimum penetration and bent over. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	5 ³ / ₈ "	
15-1.3 ^{l, m}	2" x 4" wood studs 16" on center with 7/8" cement plaster (measured from the face of studs) on the exterior surface with interior surface treatment as required for interior wood stud partitions in this table. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	Varies	
15-1.4	3 ⁵ / ₈ " No. 16 gage noncombustible studs 16" on center with 7/8" cement plaster (measured from the face of the studs) on the exterior surface with interior surface treatment as required for interior, nonbearing, noncombustible stud partitions in this table. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	Varies ^d	
	2 ¹ / ₄ " x 3 ³ / ₄ " clay face brick with cored holes over 1/2" gypsum sheathing on exterior surface of 2" x 4" wood studs at 16" on center and two layers 5/8" Type X gypsum					

15. Exterior or interior walls	15-1.5 ^m	wallboard ^e on interior surface. Sheathing placed horizontally or vertically with vertical joints over studs nailed 6" on center with 1 ³ / ₄ " x No. 11 gage by 7 ⁷ / ₁₆ " head galvanized nails. Inner layer of wallboard placed horizontally or vertically and nailed 8" on center with 6d cooler ⁿ or wallboard ⁿ nails. Outer layer of wallboard placed horizontally or vertically and nailed 8" on center with 8d cooler ⁿ or wallboard ⁿ nails. Joints staggered with vertical joints over studs. Outer layer joints taped and finished with compound. Nail heads covered with joint compound. 0.035 inch (No. 20 galvanized sheet gage) corrugated galvanized steel wall ties 3 ³ / ₄ " by 6 ⁵ / ₈ " attached to each stud with two 8d cooler ⁿ or wallboard ⁿ nails every sixth course of bricks.	—	—	10	—
	15-1.6 ^{l, m}	2" x 6" fire-retardant-treated wood studs 16" on center. Interior face has two layers of 5 ⁵ / ₈ " Type X gypsum with the base layer placed vertically and attached with 6d box nails 12" on center. The face layer is placed horizontally and attached with 8d box nails 8" on center at joints and 12" on center elsewhere. The exterior face has a base layer of 5 ⁵ / ₈ " Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by self-furred exterior lath attached with 2 ¹ / ₂ ", No. 12 gage galvanized roofing nails with a 3 ³ / ₈ " diameter head and spaced 6" on center along each stud. Cement plaster consisting of a 1 ¹ / ₂ " brown coat is then applied. The scratch coat is mixed in the proportion of 1:3 by weight, cement to sand with 10 pounds of hydrated lime and 3 pounds of approved additives or admixtures per sack of cement. The brown coat is mixed in the proportion of 1:4 by weight, cement to sand with the same amounts of hydrated lime and approved additives or admixtures used in the scratch coat.	—	—	8 ¹ / ₄	—
	15-1.7 ^{l, m}	2" x 6" wood studs 16" on center. The exterior face has a layer of 5 ⁵ / ₈ " Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by 1" by No. 18 gage self-furred exterior lath attached with 8d by 2 ¹ / ₂ "-long galvanized roofing nails spaced 6" on center along each stud. Cement plaster consisting of a 1 ¹ / ₂ " scratch coat, a bonding agent and a 1 ¹ / ₂ " brown coat and a finish coat is then applied. The scratch coat is mixed in the proportion of 1:3 by weight, cement to sand with 10 pounds of hydrated lime and 3 pounds of approved additives or admixtures per sack of cement. The brown coat is mixed in the proportion of 1:4 by weight, cement to sand with the same amounts of hydrated lime and approved additives or admixtures used in the scratch coat. The interior is covered with 3 ³ / ₈ " gypsum lath with 1" hexagonal mesh of 0.035 inch (No. 20 B.W. gage) woven wire lath furred out 5 ⁵ / ₁₆ " and 1" perlite or vermiculite gypsum plaster. Lath nailed with 1 ¹ / ₈ " by No. 13 gage by 19 ¹⁹ / ₆₄ " head plasterboard glued nails spaced 5" on center. Mesh attached by 1 ³ / ₄ " by No. 12 gage by 3 ³ / ₈ " head nails with 3 ³ / ₈ " furrings, spaced 8" on center. The plaster mix shall not exceed 100 pounds of gypsum to 2 ¹ / ₂ cubic feet of aggregate.	—	—	8 ³ / ₈	—
	15-1.8 ^{l, m}	2" x 6" wood studs 16" on center. The exterior face has a layer of 5 ⁵ / ₈ " Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by 1 ¹ / ₂ " by No. 17 gage self-furred exterior lath attached with 8d by 2 ¹ / ₂ "-long galvanized roofing nails spaced 6" on center along each stud. Cement plaster consisting of a 1 ¹ / ₂ " scratch coat and a 1 ¹ / ₂ " brown coat is then applied. The plaster may shall be permitted to be placed by machine. The scratch coat is mixed in the proportion of 1:4 by weight, plastic cement to sand. The brown coat is mixed in the proportion of 1:5 by weight, plastic cement to sand. The interior is covered with 3 ³ / ₈ " gypsum lath with 1" hexagonal mesh of No. 20-gage woven wire lath furred out 5 ⁵ / ₁₆ " and 1" perlite or vermiculite gypsum plaster. Lath nailed with 1 ¹ / ₈ " by No. 13 gage by 19 ¹⁹ / ₆₄ " head plasterboard glued nails spaced 5" on center. Mesh attached by 1 ³ / ₄ " by No. 12 gage by 3 ³ / ₈ " head nails with 3 ³ / ₈ " furrings, spaced 8" on center. The plaster mix shall not exceed 100 pounds of gypsum to 2 ¹ / ₂ cubic feet of aggregate.	—	—	8 ³ / ₈	—
	15-1.9	4" No. 18 gage, nonload-bearing metal studs, 16" on center, with 1" Portland cement lime plaster (measured from the back side of the 3 ³ / ₄ -pound expanded metal lath) on the exterior surface. Interior surface to be covered with 1" of gypsum plaster on 3 ³ / ₄ -pound expanded metal lath proportioned by weight—1:2 for scratch coat, 1:3 for brown, gypsum to sand. Lath on one side of the partition fastened to 1 ¹ / ₄ " diameter pencil rods supported by No. 20 gage metal clips, located 16" on center vertically, on each stud. 3" thick mineral fiber insulating batts friction fitted between the studs.	—	—	6 ¹ / ₂ ^d	—
		Steel studs 0.060" thick, 4" deep or 6" at 16" or 24" centers, with 1 ¹ / ₂ " glass fiber-reinforced concrete (GFRC) on the exterior surface. GFRC is attached with flex				

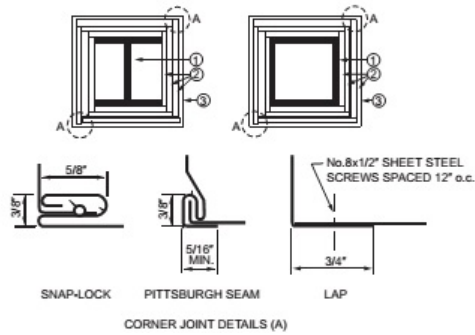
15-1.10	anchors at 24" on center, with 5" leg welded to studs with two 1/2"-long flare-bevel welds, and 4" foot attached to the GFRC skin with 5/8"-thick GFRC bonding pads that extend 2 1/2" beyond the flex anchor foot on both sides. Interior surface to have two layers of 1/2" Type X gypsum wallboard. The first layer of wallboard to be attached with 1"-long Type S buglehead screws spaced 24" on center and the second layer is attached with 1 5/8"-long Type S screws spaced at 12" on center. Cavity is to be filled with 5" of 4 pcf (nominal) mineral fiber batts. GFRC has 1 1/2" returns packed with mineral fiber and caulked on the exterior.	—	—	6 1/2	—
15-1.11	Steel studs 0.060" thick, 4" deep or 6" at 16" or 24" centers, respectively, with 1/2" glass fiber-reinforced concrete (GFRC) on the exterior surface. GFRC is attached with flex anchors at 24" on center, with 5" leg welded to studs with two 1/2"-long flare-bevel welds, and 4" foot attached to the GFRC skin with 5/8"-thick GFRC bonding pads that extend 2 1/2" beyond the flex anchor foot on both sides. Interior surface to have one layer of 5/8" Type X gypsum wallboard, attached with 1 1/4"-long Type S buglehead screws spaced 12" on center. Cavity is to be filled with 5" of 4 pcf (nominal) mineral fiber batts. GFRC has 1 1/2" returns packed with mineral fiber and caulked on the exterior.	—	—	—	6 1/8
15-1.12 ^q	2" x 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with 5/8" Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with 2 1/4" Type S drywall screws, spaced 12" on center. Cavity to be filled with 5 1/2" mineral wool insulation.	—	—	—	6 3/4
15-1.13 ^q	2" x 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with 5/8" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with 2 1/4" Type S drywall screws, spaced 12" on center. R-19 mineral fiber insulation installed in stud cavity.	—	—	—	6 3/4
15-1.14 ^q	2" x 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with 5/8" Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with 2 1/4" Type S drywall screws, spaced 7" on center.	—	—	—	6 3/4
15-1.15 ^q	2" x 4" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with 5/8" Type X gypsum wallboard and sheathing, respectively, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with 2 1/4" Type S drywall screws, spaced 12" on center. Cavity to be filled with 3 1/2" mineral wool insulation.	—	—	—	4 3/4
15-1.16 ^q	2" x 6" wood studs at 24" centers with double top plates, single bottom plate; interior and exterior side covered with two layers of 5/8" Type X gypsum wallboard, 4' wide, applied horizontally with vertical joints over studs. Base layer fastened with 2 1/4" Type S drywall screws, spaced 24" on center and face layer fastened with Type S drywall screws, spaced 8" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Cavity to be filled with 5 1/2" mineral wool insulation.	—	—	8	—
15-2.1 ^d	3 5/8" No. 16 gage steel studs at 24" on center or 2" x 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum 3/4" thick Portland cement plaster. Thin veneer brick units of clay or shale complying with C1157/C1157M—2017, Grade TBS or better, installed in running bond in accordance with Section 1404.10. Combined total thickness of the Portland cement plaster, mortar and thin veneer brick units shall be not less than 1 3/4". Interior side covered with one layer of 5/8"-thick Type X gypsum wallboard attached to studs with 1" long No. 6 drywall screws at 12" on center.	—	—	—	6
15-2.2 ^d	3 5/8" No. 16 gage steel studs at 24" on center or 2" x 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum 3/4" thick Portland cement plaster. Thin veneer brick units of clay or shale complying with C1157/C1157M—2017, Grade TBS or better, installed in running bond in accordance with Section 1404.10. Combined total thickness of the Portland cement plaster, mortar and thin veneer brick units shall be not less than 2". Interior side covered with two layers of 5/8"-thick Type X gypsum wallboard. Bottom layer attached to studs with 1"-long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 5/8"-long No. 6 drywall screws at 12" on center.	—	—	6 7/8	—
	3 5/8" No. 16 gage steel studs at 16" on center or 2" x 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1"-long No. 6				

	15-2.3 ^d	drywall screws at 6" on center. Brick units of clay or shale not less than 2 ⁵ / ₈ " thick complying with C270—14a installed in accordance with Section 1404.6 with a minimum 1" airspace. Interior side covered with one layer of 5/8"-thick Type X gypsum wallboard attached to studs with 1"-long No. 6 drywall screws at 12" on center.	—	—	—	7 ⁷ / ₈
	15-2.4 ^d	3 ⁵ / ₈ " No. 16 gage steel studs at 16" on center or 2" x 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1"-long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than 2 ⁵ / ₈ " thick complying with C270—14a installed in accordance with Section 1404.6 with a minimum 1" airspace. Interior side covered with two layers of 5/8"-thick Type X gypsum wallboard. Bottom layer attached to studs with 1"-long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 ⁵ / ₈ "-long No. 6 drywall screws at 12" on center.	—	—	8 ¹ / ₂	—
16. Exterior walls rated for fire resistance from the inside only in accordance with Section 705.5.	16-1.1 ^q	2" x 4" wood studs at 16" centers with double top plates, single bottom plate; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied horizontally unblocked, and fastened with 2 ¹ / ₄ " Type S drywall screws, spaced 12" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Exterior covered with 3/8" wood structural panels, applied vertically, horizontal joints blocked and fastened with 6d common nails (bright)—12" on center in the field, and 6" on center panel edges. Cavity to be filled with 3 ¹ / ₂ " mineral wool insulation. Rating established for exposure from interior side only.	—	—	—	4 ¹ / ₂
	16-1.2 ^q	2" x 6" wood studs at 16" centers with double top plates, single bottom plate; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs and fastened with 2 ¹ / ₄ " Type S drywall screws, spaced 12" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound, exterior side covered with 7/16" wood structural panels fastened with 6d common nails (bright) spaced 12" on center in the field and 6" on center along the panel edges. Cavity to be filled with 5 ¹ / ₂ " mineral wool insulation. Rating established from the gypsum-covered side only.	—	—	—	6 ⁹ / ₁₆
	16-1.3 ^q	2" x 6" wood studs at 16" centers with double top plates, single bottom plates; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with 2 ¹ / ₄ " Type S drywall screws spaced 7" on center. Joints to be covered with tape and joint compound. Exterior covered with 3/8" wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12" on center in the field and 6" on center on panel edges. R-19 mineral fiber insulation installed in stud cavity. Rating established from the gypsum-covered side only.	—	—	—	6 ¹ / ₂

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm², 1 cubic foot = 0.0283 m³.

- a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.
- b. Thickness shown for brick and clay tile is nominal thicknesses unless plastered, in which case thicknesses are net. Thickness shown for concrete masonry and clay masonry is equivalent thickness defined in Section 722.3.1 for concrete masonry and Section 722.4.1.1 for clay masonry. Where all cells are solid grouted or filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, the equivalent thickness shall be the thickness of the block or brick using specified dimensions as defined in Chapter 21. Equivalent thickness shall include the thickness of applied plaster and lath or gypsum wallboard, where specified.
- c. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is not less than 75 percent of the gross cross-sectional area measured in the same plane.
- d. Shall be used for nonbearing purposes only.
- e. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard, and the joints on the face layer are reinforced and the entire surface is covered with not less than 1/16-inch gypsum veneer plaster.
- f. The fire-resistance time period for concrete masonry units meeting the equivalent thicknesses required for a 2-hour fire-resistance rating in Item 3, and having a thickness of not less than 7⁵/₈ inches is 4 hours where cores that are not grouted are filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, sand or slag having a maximum particle size of 3/8 inch.
- g. The fire-resistance rating of concrete masonry units composed of a combination of aggregate types or where plaster is applied directly to the concrete masonry shall be determined in accordance with ACI 216.1/TMS 0216. Lightweight aggregates shall have a maximum combined density of 65 pounds per cubic foot.

- h. See Note b. The equivalent thickness shall be permitted to include the thickness of cement plaster or 1.5 times the thickness of gypsum plaster applied in accordance with the requirements of Chapter 25.
- i. Concrete walls shall be reinforced with horizontal and vertical temperature reinforcement as required by Chapter 19.
- j. Studs are welded truss wire studs with 0.18 inch (No. 7 B.W. gage) flange wire and 0.18 inch (No. 7 B.W. gage) truss wires.
- k. Nailable metal studs consist of two channel studs spot welded back to back with a crimped web forming a nailing groove.
- l. Wood structural panels shall be permitted to be installed between the fire protection and the wood studs on either the interior or exterior side of the wood frame assemblies in this table, provided that the length of the fasteners used to attach the fire protection is increased by an amount not less than the thickness of the wood structural panel.
- m. For studs with a slenderness ratio, l_e/d , greater than 33, the design stress shall be reduced to 78 percent of allowable F_c . For studs with a slenderness ratio, l_e/d , not exceeding 33, the design stress shall be reduced to 78 percent of the adjusted stress F_c calculated for studs having a slenderness ratio l_e/d of 33.
- n. For properties of cooler or wallboard nails, see ASTM C514, ASTM C547 or ASTM F1667.
- o. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA 600 shall be accepted as if herein specified.
- p. NCMA TEK 5-8A shall be permitted for the design of fire walls.
- q. The design stress of studs shall be equal to not more than 100 percent of the allowable F_c calculated in accordance with Section 2306.



For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

1. Structural steel column, either wide flange or tubular shapes.
2. Type X gypsum board or gypsum panel products in accordance with ASTM C1177, C1178, C1278, C1396 or C1658. The total thickness of gypsum board or gypsum panel products calculated as h in Section 722.5.1.2 shall be applied vertically to an individual column using one of the following methods:
 1. As a single layer without horizontal joints.
 2. As multiple layers with horizontal joints not permitted in any layer.
 3. As multiple layers with horizontal joints staggered not less than 12 inches vertically between layers and not less than 8 feet vertically in any single layer. The total required thickness of gypsum board or gypsum panel products shall be determined on the basis of the specified fire-resistance rating and the weight-to-heated-perimeter ratio (W/D) of the column. For fire-resistance ratings of 2 hours or less, one of the required layers of gypsum board or gypsum panel product ~~may~~ shall be permitted to be applied to the exterior of the sheet steel column covers with 1-inch long Type S screws spaced 1 inch from the wallboard edge and 8 inches on center. For such installations, 0.0149-inch minimum thickness galvanized steel corner beads with $1\frac{1}{2}$ -inch legs shall be attached to the wallboard with Type S screws spaced 12 inches on center.
3. For fire-resistance ratings of 3 hours or less, the column covers shall be fabricated from 0.0239-inch minimum thickness galvanized or stainless steel. For 4-hour fire-resistance ratings, the column covers shall be fabricated from 0.0239-inch minimum thickness stainless steel. The column covers shall be erected with the Snap Lock or Pittsburgh joint details. For fire-resistance ratings of 2 hours or less, column covers fabricated from 0.0269-inch minimum thickness galvanized or stainless steel shall be permitted to be erected with lap joints. The lap joints shall be permitted to be located anywhere around the perimeter of the column cover. The lap joints shall be secured with $\frac{1}{2}$ -inch-long No. 8 sheet metal screws spaced 12 inches on center. The column covers shall be provided with a minimum expansion clearance of $\frac{1}{8}$ inch per linear foot between the ends of the cover and any restraining construction.

FIGURE 722.5.1(2)
GYPSUM-PROTECTED STRUCTURAL STEEL COLUMNS WITH SHEET STEEL COLUMN COVERS

FS97-21 Part II

IFC: 5704.2.9.7.5.1, TABLE 6109.12

Proponents: Mike Nugent, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org); Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Fire Code

Revise as follows:

5704.2.9.7.5.1 Information signs. A permanent sign shall be provided at the fill point for the tank, documenting the filling procedure and the tank calibration chart.

Exception:

Where climatic conditions are such that the sign ~~may be~~ has the potential to be obscured by ice or snow, or weathered beyond readability or otherwise impaired, said procedures and chart shall be located in the office window, lock box or other area available to the person filling the tank.

**TABLE 6109.12
SEPARATION FROM EXPOSURES OF LP-GAS CONTAINERS AWAITING USE, RESALE OR EXCHANGE STORED OUTSIDE OF
BUILDINGS**

QUANTITY OF LP-GAS STORED (pounds)	MINIMUM SEPARATION DISTANCE FROM STORED LP-GAS CYLINDERS TO (feet):						
	Nearest important building or group of buildings or line of adjoining property that <u>may be has the potential to be built on</u>	Line of adjoining property occupied by schools, places of religious worship, hospitals, athletic fields or other points of public gathering; busy thoroughfares; or sidewalks	LP-gas dispensing station	Doorway or opening to a building with two or more means of egress	Doorway or opening to a building with one means of egress	Combustible materials	Motor vehicle fuel dispenser
720 or less	0	0	5	5	10	10	20
721–2,500	0	10	10	5	10	10	20
2,501–6,000	10	10	10	10	10	10	20
6,001–10,000	20	20	20	20	20	10	20
Over 10,000	25	25	25	25	25	10	20

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

FS97-21 Part II

FS97-21 Part III

IZC: 302.1, 305.1, 1004.4, 1008.1.1, 1008.2.4, 1008.2.6, 1009.2, 1301.1, 1302.2

Proponents: Mike Nugent, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org); Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Zoning Code

Revise as follows:

302.1 Minimum areas. The minimum areas that ~~may~~ constitute a separate or detached part of any of the following zoning districts on the zoning map or subsequent amendments to said zoning map shall be as shown in Table 302.1. Where a nonresidential district is directly across the street from or abuts the district with the same or less restrictive classification, the area of the land directly across the street or abutting the property ~~may~~ shall be permitted to be included in the calculations in meeting the minimum district size requirements.

305.1 General. The principal objective of this zoning code is to provide for an orderly arrangement of compatible buildings and land uses, and for the property location of all types of uses required for the social and economic welfare of the community. To accomplish this objective, each type and kind of use is classified as permitted in one or more of the various use districts established by this code. However, in addition to those uses specifically classified and permitted in each district, there are certain additional uses that it ~~may be~~ is necessary to allow because of the unusual characteristics of the service they provide the public. These *conditional uses* require particular considerations as to their proper location to adjacent, established or intended uses, or to the planned growth of the community. The conditions controlling the locations and operation of such special uses are established by the applicable sections of this code.

1004.4 Traffic visibility. Signs or sign structures shall not be erected at the intersection of any street in such a manner as to obstruct free and clear vision, nor at any location where by its position, shape or color it ~~may interfere~~ interferes with or obstruct the view of or be confused with any authorized traffic sign, signal or device.

1008.1.1 Wall signs. Every single-family residence, multiple-family residential complex, commercial or *industrial* building, and every separate nonresidential building in a residential zone ~~may shall be permitted to~~ display wall signs per street frontage subject to the limiting standards set forth in Table 1008.1.1(1). For shopping centers, planned *industrial parks* or other multiple-occupancy nonresidential buildings, the building face or wall shall be calculated separately for each separate occupancy, but in no event will the allowed area for any separate occupancy be less than [JURISDICTION TO INSERT NUMBER] square feet.

1008.2.4 Special event signs in public ways. Signs advertising a special community event shall not be prohibited in or over public rights-of-way, subject to approval by the code official as to the size, location and method of erection. The code official ~~may shall be permitted to~~ not approve any special event signage that would impair the safety and convenience of use of public rights-of-way, or obstruct traffic visibility.

1008.2.6 Political signs. Political signs shall be permitted in all zoning districts, subject to the following limitations:

1. Such signs shall not exceed a height of [JURISDICTION TO INSERT NUMBER] feet nor an area of [JURISDICTION TO INSERT NUMBER] square feet.
2. Such signs for election candidates or ballot propositions shall be displayed only for a period of 60 days preceding the election and shall be removed within 10 days after the election, provided that signs promoting successful candidates or ballot propositions in a primary election ~~may shall be permitted to~~ remain displayed until not more than 10 days after the general election.
3. Such signs shall not be placed in any public right-of-way or obstruct traffic visibility.

1009.2 Development complex sign. In addition to the freestanding business identification signs otherwise allowed by this ordinance, every multiple-occupancy development complex shall be entitled to one free-standing sign per street front, at the maximum size permitted for business identification free-standing signs, to identify the development complex. Business identification shall not be permitted on a development complex sign. Any free-standing sign otherwise permitted under this ordinance ~~may shall~~ identify the name of the development complex.

1301.1 Approval. *Planned unit developments* (PUDs) shall be allowed by planning commission approval in any zoning district. Such *planned unit development* permit shall not be granted unless such development will meet the use limitations of the zoning district in which it is located and meet the *density* and other limitations of such districts, except as such requirements ~~may shall~~ be lawfully modified as provided by this code. Compliance with the regulations of this code in no way excuses the developer from the applicable requirements of a subdivision ordinance, except as modifications thereof are specifically authorized in the approval of the application for the planned unit development.

1302.2 Uses. *Aplanned unit development* that will contain uses not permitted in the zoning district in which it is to be located will require a change of zoning district and shall be accompanied by an application for a zoning amendment, except that any residential use shall be considered to be a permitted use in a *planned unit development*, which allows residential uses and shall be governed by *density*, design and other requirements of the *planned unit development* permit.

Where a site is situated in more than one use district, the permitted uses applicable to such property in one district ~~may shall be permitted to~~ be extended into the adjacent use district.

Reason Statement: The term 'may' is subjective. The proposal is to bring the text into enforceable language by using the ICC preferred language as often as possible. Similar proposals will be submitted for the Group B cycle for IRC, IECC and IEBC.

This is a joint proposal submitted by the ICC Building Code Action Committee (BCAC) and the ICC Fire Code Action Committee (FCAC).

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 2020 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.

The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at:
FCAC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
These changes are only changing verbiage.

FS98-21

IBC: TABLE 721.1(2)

Proponents: David Tyree, representing AWC (dtyree@awc.org); Jason Smart, American Wood Council, representing AWC (jsmart@awc.org)

2021 International Building Code

Revise as follows:

TABLE 721.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS^{a, o, p}

Portions of table not shown remain unchanged.

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE ^b (inches)			
			4 hours	3 hours	2 hours	1 hour
16. Exterior walls rated for fire resistance from the inside only in accordance with Section 705.5.	16-1.4 ^a	<u>2" x 6" wood studs at 24" centers with double top plates, single bottom plates; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with 2 1/4" Type S drywall screws spaced 7" on center. Joints covered with tape and joint compound. Exterior covered with 15/32" wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12" on center in the field and 6" on center on panel edges. R-19 fiberglass insulation installed in stud cavity. Rating established from the gypsum-covered side only.</u>	=	=	=	6 ^{19/32}

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm², 1 cubic foot = 0.0283 m³.

- a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.
- b. Thickness shown for brick and clay tile is nominal thicknesses unless plastered, in which case thicknesses are net. Thickness shown for concrete masonry and clay masonry is equivalent thickness defined in Section 722.3.1 for concrete masonry and Section 722.4.1.1 for clay masonry. Where all cells are solid grouted or filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, the equivalent thickness shall be the thickness of the block or brick using specified dimensions as defined in Chapter 21. Equivalent thickness shall include the thickness of applied plaster and lath or gypsum wallboard, where specified.
- c. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is not less than 75 percent of the gross cross-sectional area measured in the same plane.
- d. Shall be used for nonbearing purposes only.
- e. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard, and the joints on the face layer are reinforced and the entire surface is covered with not less than 1/16-inch gypsum veneer plaster.
- f. The fire-resistance time period for concrete masonry units meeting the equivalent thicknesses required for a 2-hour fire-resistance rating in Item 3, and having a thickness of not less than 7⁵/₈ inches is 4 hours where cores that are not grouted are filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, sand or slag having a maximum particle size of 3/8 inch.
- g. The fire-resistance rating of concrete masonry units composed of a combination of aggregate types or where plaster is applied directly to the concrete masonry shall be determined in accordance with ACI 216.1/TMS 0216. Lightweight aggregates shall have a maximum combined density of 65 pounds per cubic foot.
- h. See Note b. The equivalent thickness shall be permitted to include the thickness of cement plaster or 1.5 times the thickness of gypsum plaster applied in accordance with the requirements of Chapter 25.
- i. Concrete walls shall be reinforced with horizontal and vertical temperature reinforcement as required by Chapter 19.
- j. Studs are welded truss wire studs with 0.18 inch (No. 7 B.W. gage) flange wire and 0.18 inch (No. 7 B.W. gage) truss wires.
- k. Nailable metal studs consist of two channel studs spot welded back to back with a crimped web forming a nailing groove.
- l. Wood structural panels shall be permitted to be installed between the fire protection and the wood studs on either the interior or exterior side of the wood frame assemblies in this table, provided that the length of the fasteners used to attach the fire protection is increased by an amount not less than the thickness of the wood structural panel.
- m. For studs with a slenderness ratio, l_e/d , greater than 33, the design stress shall be reduced to 78 percent of allowable F_c . For studs with a slenderness ratio, l_e/d , not exceeding 33, the design stress shall be reduced to 78 percent of the adjusted stress F_c calculated for studs having a slenderness ratio l_e/d of 33.
- n. For properties of cooler or wallboard nails, see ASTM C514, ASTM C547 or ASTM F1667.
- o. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA 600 shall be accepted as if herein specified.
- p. NCMA TEK 5-8A shall be permitted for the design of fire walls.

q. The design stress of studs shall be equal to not more than 100 percent of the allowable F_c calculated in accordance with Section 2306.

Reason Statement: Fire-resistance-rated wood-frame assemblies can be found in a number of sources including the *IBC*, Underwriters Laboratories (UL) *Fire Resistance Directory*, Intertek Testing Services' *Directory of Listed Products*, and the Gypsum Association's *Fire Resistance Design Manual*. The American Wood Council (AWC) has tested a number of wood-frame fire-resistance-rated assemblies. This proposal is adding another tested assembly which is popular among designers and is being provided for the convenience of the building official. It is the same as Assembly WS6-1.6 in the American Wood Council's publication titled *Design for Code Acceptance (DCA) 3 - Fire-Resistance-Rated Wood-Frame Wall and Floor/Ceiling Assemblies*, which may be downloaded from the AWC website. Similar descriptions of successfully tested wood stud wall assemblies are provided in Table 721.1(2) for one-hour and two-hour fire-resistance-rated wall assemblies.

Bibliography: Design for Code Acceptance (DCA) 3 – *Fire-Resistance-Rated Wood-Frame Wall and Floor/Ceiling Assemblies*, American Wood Council, 2020,
https://awc.org/pdf/codes-standards/publications/dca/AWC_DCA3_20200401_AWCWebsite.pdf

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal simply adds another tested assembly for one-hour wall construction.

FS98-21

FS99-21

IBC: TABLE 721.1(2)

Proponents: John-Jozef Proczka, representing self (john-jozef.proczka@phoenix.gov)

2021 International Building Code

Revise as follows:

TABLE 721.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS ^{a, o, p}

Portions of table not shown remain unchanged.

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE ^b (inches)			
			4 hours	3 hours	2 hours	1 hour
	15-1.1 ^{l, m}	Exterior surface with 3/4" drop siding over 1/2" gypsum sheathing on 2" x 4" wood studs at 16" on center, interior surface treatment as required for 1-hour-rated exterior or interior 2" x 4" wood stud partitions. Gypsum sheathing nailed with 13/4" by No.11 gage by 7/16" head galvanized nails at 8" on center. Siding nailed with 7d galvanized smooth box nails.	—	—	—	Varies
	15-1.2 ^{l, m}	2" x 4" wood studs 16" on center with metal lath and 3/4" cement plaster on each side. Lath attached with 6d common nails 7" on center driven to 1" minimum penetration and bent over. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	5 3/8
	15-1.3 ^{l, m}	2" x 4" wood studs 16" on center with 7/8" cement plaster (measured from the face of studs) on the exterior surface with interior surface treatment as required for interior wood stud partitions in this table. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	Varies
	15-1.4	3 5/8" No. 16 gage noncombustible studs 16" on center with 7/8" cement plaster (measured from the face of the studs) on the exterior surface with interior surface treatment as required for interior, nonbearing, noncombustible stud partitions in this table. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	Varies ^d
	15-1.5 ^m	2 1/4" x 3 3/4" clay face brick with cored holes over 1/2" gypsum sheathing on exterior surface of 2" x 4" wood studs at 16" on center and two layers 5/8" Type X gypsum wallboard ^e on interior surface. Sheathing placed horizontally or vertically with vertical joints over studs nailed 6" on center with 1 3/4" x No. 11 gage by 7/16" head galvanized nails. Inner layer of wallboard placed horizontally or vertically and nailed 8" on center with 6d cooler ⁿ or wallboard ⁿ nails. Outer layer of wallboard placed horizontally or vertically and nailed 8" on center with 8d cooler ⁿ or wallboard ⁿ nails. Joints staggered with vertical joints over studs. Outer layer joints taped and finished with compound. Nail heads covered with joint compound. 0.035 inch (No. 20 galvanized sheet gage) corrugated galvanized steel wall ties 3/4" by 6 5/8" attached to each stud with two 8d cooler ⁿ or wallboard ⁿ nails every sixth course of bricks.	—	—	10	—
	15-1.6 ^{l, m}	2" x 6" fire-retardant-treated wood studs 16" on center. Interior face has two layers of 5/8" Type X gypsum with the base layer placed vertically and attached with 6d box nails 12" on center. The face layer is placed horizontally and attached with 8d box nails 8" on center at joints and 12" on center elsewhere. The exterior face has a base layer of 5/8" Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by self-furred exterior lath attached with 2 1/2", No. 12 gage galvanized roofing nails with a 3/8" diameter head and spaced 6" on center along each stud. Cement plaster consisting of a 1/2" brown coat is then applied. The scratch coat is mixed in the proportion of 1:3 by weight, cement to sand with 10 pounds of hydrated lime and 3 pounds of approved additives or admixtures per sack of cement. The brown coat is mixed in the proportion of 1:4 by weight, cement to sand with the same amounts of hydrated lime and approved additives or admixtures used in the scratch coat.	—	—	8 1/4	—
	15-1.7 ^{l, m}	2" x 6" wood studs 16" on center. The exterior face has a layer of 5/8" Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by 1" by No. 18 gage self-furred exterior lath attached with 8d by 2 1/2"-long galvanized roofing nails spaced 6" on center along each stud. Cement plaster consisting of a 1/2" scratch coat, a bonding agent and a 1/2" brown coat and a finish coat is then applied. The scratch coat is mixed in the proportion of 1:3 by weight, cement to sand with 10 pounds of hydrated lime and 3 pounds of approved additives or admixtures per sack of cement. The brown coat is mixed in the proportion of 1:4 by weight, cement to sand with the same amounts of hydrated lime and approved additives or admixtures used in the scratch coat. The interior is covered with 3/8" gypsum lath with 1" hexagonal mesh of 0.035 inch (No. 20 B.W. gage) woven wire lath	—	—	8 3/8	—

		furred out $\frac{5}{16}$ " and 1" perlite or vermiculite gypsum plaster. Lath nailed with $1\frac{1}{8}$ " by No. 13 gage by $\frac{19}{64}$ " head plasterboard glued nails spaced 5" on center. Mesh attached by $1\frac{3}{4}$ " by No. 12 gage by $\frac{3}{8}$ " head nails with $\frac{3}{8}$ " furrings, spaced 8" on center. The plaster mix shall not exceed 100 pounds of gypsum to $2\frac{1}{2}$ cubic feet of aggregate.				
	15-1.8 ^m	2" x 6" wood studs 16" on center. The exterior face has a layer of $\frac{5}{8}$ " Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by $1\frac{1}{2}$ " by No. 17 gage self-furred exterior lath attached with 8d by $2\frac{1}{2}$ "-long galvanized roofing nails spaced 6" on center along each stud. Cement plaster consisting of a $\frac{1}{2}$ " scratch coat and a $\frac{1}{2}$ " brown coat is then applied. The plaster may be placed by machine. The scratch coat is mixed in the proportion of 1:4 by weight, plastic cement to sand. The brown coat is mixed in the proportion of 1:5 by weight, plastic cement to sand. The interior is covered with $\frac{3}{8}$ " gypsum lath with 1" hexagonal mesh of No. 20-gage woven wire lath furred out $\frac{5}{16}$ " and 1" perlite or vermiculite gypsum plaster. Lath nailed with $1\frac{1}{8}$ " by No. 13 gage by $\frac{19}{64}$ " head plasterboard glued nails spaced 5" on center. Mesh attached by $1\frac{3}{4}$ " by No.12 gage by $\frac{3}{8}$ " head nails with $\frac{3}{8}$ " furrings, spaced 8" on center. The plaster mix shall not exceed 100 pounds of gypsum to $2\frac{1}{2}$ cubic feet of aggregate.	—	—	$8\frac{3}{8}$	—
	15-1.9	4" No. 18 gage, nonload-bearing metal studs, 16" on center, with 1" Portland cement lime plaster (measured from the back side of the $\frac{3}{4}$ -pound expanded metal lath) on the exterior surface. Interior surface to be covered with 1" of gypsum plaster on $\frac{3}{4}$ -pound expanded metal lath proportioned by weight—1:2 for scratch coat, 1:3 for brown, gypsum to sand. Lath on one side of the partition fastened to $\frac{1}{4}$ " diameter pencil rods supported by No. 20 gage metal clips, located 16" on center vertically, on each stud. 3" thick mineral fiber insulating batts friction fitted between the studs.	—	—	$6\frac{1}{2}$ ^d	—
	15-1.10	Steel studs 0.060" thick, 4" deep or 6" at 16" or 24" centers, with $\frac{1}{2}$ " glass fiber-reinforced concrete (GFRC) on the exterior surface. GFRC is attached with flex anchors at 24" on center, with 5" leg welded to studs with two $\frac{1}{2}$ "-long flare-bevel welds, and 4" foot attached to the GFRC skin with $\frac{5}{8}$ "-thick GFRC bonding pads that extend $2\frac{1}{2}$ " beyond the flex anchor foot on both sides. Interior surface to have two layers of $\frac{1}{2}$ " Type X gypsum wallboard. ^e The first layer of wallboard to be attached with 1"-long Type S buglehead screws spaced 24" on center and the second layer is attached with $1\frac{5}{8}$ "-long Type S screws spaced at 12" on center. Cavity is to be filled with 5" of 4 pcf (nominal) mineral fiber batts. GFRC has $1\frac{1}{2}$ " returns packed with mineral fiber and caulked on the exterior.	—	—	$6\frac{1}{2}$	—
	15-1.11	Steel studs 0.060" thick, 4" deep or 6" at 16" or 24" centers, respectively, with $\frac{1}{2}$ " glass fiber-reinforced concrete (GFRC) on the exterior surface. GFRC is attached with flex anchors at 24" on center, with 5" leg welded to studs with two $\frac{1}{2}$ "-long flare-bevel welds, and 4" foot attached to the GFRC skin with $\frac{5}{8}$ "-thick GFRC bonding pads that extend $2\frac{1}{2}$ " beyond the flex anchor foot on both sides. Interior surface to have one layer of $\frac{5}{8}$ " Type X gypsum wallboard ^e , attached with $1\frac{1}{4}$ "-long Type S buglehead screws spaced 12" on center. Cavity is to be filled with 5" of 4 pcf (nominal) mineral fiber batts. GFRC has $1\frac{1}{2}$ " returns packed with mineral fiber and caulked on the exterior.	—	—	—	$6\frac{1}{8}$
	15-1.12 ^q	2" x 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $\frac{5}{8}$ " Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2\frac{1}{4}$ " Type S drywall screws, spaced 12" on center. Cavity to be filled with $5\frac{1}{2}$ " mineral wool insulation.	—	—	—	$6\frac{3}{4}$
	15-1.13 ^q	2" x 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $\frac{5}{8}$ " Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with $2\frac{1}{4}$ " Type S drywall screws, spaced 12" on center. R-19 mineral fiber insulation installed in stud cavity.	—	—	—	$6\frac{3}{4}$
	15-1.14 ^q	2" x 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $\frac{5}{8}$ " Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2\frac{1}{4}$ " Type S drywall screws, spaced 7" on center.	—	—	—	$6\frac{3}{4}$
	15-1.15 ^q	2" x 4" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $\frac{5}{8}$ " Type X gypsum wallboard and sheathing, respectively, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2\frac{1}{4}$ " Type S drywall screws, spaced 12" on center. Cavity to be filled with $3\frac{1}{2}$ " mineral wool insulation.	—	—	—	$4\frac{3}{4}$
		2" x 6" wood studs at 24" centers with double top plates, single bottom plate; interior and exterior side covered with two layers of $\frac{5}{8}$ " Type X gypsum wallboard, 4' wide, applied horizontally with vertical joints over studs. Base layer fastened with $2\frac{1}{4}$ " Type S drywall				

15. Exterior or interior walls

	15-1.16 ^d	screws, spaced 24" on center and face layer fastened with Type S drywall screws, spaced 8" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Cavity to be filled with 5 ¹ / ₂ " mineral wool insulation.	—	—	8	—
	15-2.1 ^d	3 ⁵ / ₈ " No. 16 gage steel studs at 24" on center or 2" x 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum 3/4" thick Portland cement plaster. Thin veneer brick units of clay or shale complying with C1157/C1157M—2017, Grade TBS or better, installed in running bond in accordance with Section 1404.10. Combined total thickness of the Portland cement plaster, mortar and thin veneer brick units shall be not less than 1 ³ / ₄ ". Interior side covered with one layer of 5/8"-thick Type X gypsum wallboard attached to studs with 1" long No. 6 drywall screws at 12" on center.	—	—	—	6
	15-2.2 ^d	3 ⁵ / ₈ " No. 16 gage steel studs at 24" on center or 2" x 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum 3/4" thick Portland cement plaster. Thin veneer brick units of clay or shale complying with C1157/C1157M—2017, Grade TBS or better, installed in running bond in accordance with Section 1404.10. Combined total thickness of the Portland cement plaster, mortar and thin veneer brick units shall be not less than 2". Interior side covered with two layers of 5/8"-thick Type X gypsum wallboard. Bottom layer attached to studs with 1"-long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 ⁵ / ₈ "-long No. 6 drywall screws at 12" on center.	—	—	6 ⁷ / ₈	—
	15-2.3 ^d	3 ⁵ / ₈ " No. 16 gage steel studs at 16" on center or 2" x 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1"-long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than 2 ⁵ / ₈ " thick complying with C270—14a installed in accordance with Section 1404.6 with a minimum 1" airspace. Interior side covered with one layer of 5/8"-thick Type X gypsum wallboard attached to studs with 1"-long No. 6 drywall screws at 12" on center.	—	—	—	7 ¹ / ₈
	15-2.4 ^d	3 ⁵ / ₈ " No. 16 gage steel studs at 16" on center or 2" x 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1"-long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than 2 ⁵ / ₈ " thick complying with C270—14a installed in accordance with Section 1404.6 with a minimum 1" airspace. Interior side covered with two layers of 5/8"-thick Type X gypsum wallboard. Bottom layer attached to studs with 1"-long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 ⁵ / ₈ "-long No. 6 drywall screws at 12" on center.	—	—	8 ¹ / ₂	—
16. Exterior walls rated for fire resistance from the inside only in accordance with Section 705.5.	16-1.1 ^q	2" x 4" wood studs at 16" centers with double top plates, single bottom plate; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied horizontally unblocked, and fastened with 2 ¹ / ₄ " Type S drywall screws, spaced 12" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Exterior covered with 3/8" wood structural panels, applied vertically, horizontal joints blocked and fastened with 6d common nails (bright)—12" on center in the field, and 6" on center panel edges. Cavity to be filled with 3 ¹ / ₂ " mineral wool insulation. Rating established for exposure from interior side only.	—	—	—	4 ¹ / ₂
	16-1.2 ^q	2" x 6" wood studs at 16" centers with double top plates, single bottom plate; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs and fastened with 2 ¹ / ₄ " Type S drywall screws, spaced 12" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound, exterior side covered with 7/16" wood structural panels fastened with 6d common nails (bright) spaced 12" on center in the field and 6" on center along the panel edges. Cavity to be filled with 5 ¹ / ₂ " mineral wool insulation. Rating established from the gypsum-covered side only.	—	—	—	6 ⁹ / ₁₆
	16-1.3 ^q	2" x 6" wood studs at 16" centers with double top plates, single bottom plates; interior side covered with 5/8" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with 2 ¹ / ₄ " Type S drywall screws spaced 7" on center. Joints to be covered with tape and joint compound. Exterior covered with 3/8" wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12" on center in the field and 6" on center on panel edges. R-19 mineral fiber insulation installed in stud cavity. Rating established from the gypsum-covered side only.	—	—	—	6 ¹ / ₂

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm², 1 cubic foot = 0.0283 m³.

- a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.
- b. Thickness shown for brick and clay tile is nominal thicknesses unless plastered, in which case thicknesses are net. Thickness shown for concrete masonry and clay masonry is equivalent thickness defined in Section 722.3.1 for concrete masonry and Section 722.4.1.1 for clay masonry. Where all cells are solid grouted or filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, the equivalent thickness shall be the thickness of the block or brick using specified dimensions as defined in Chapter 21. Equivalent thickness shall include the thickness of applied plaster and lath or gypsum wallboard, where specified.
- c. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is not less than 75 percent of the gross cross-sectional area measured in the same plane.
- d. Shall be used for nonbearing purposes only.
- e. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard, and the joints on the face layer are reinforced and the entire surface is covered with not less than $1/16$ -inch gypsum veneer plaster.
- f. The fire-resistance time period for concrete masonry units meeting the equivalent thicknesses required for a 2-hour fire-resistance rating in Item 3, and having a thickness of not less than $7\frac{5}{8}$ inches is 4 hours where cores that are not grouted are filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, sand or slag having a maximum particle size of $\frac{3}{8}$ inch.
- g. The fire-resistance rating of concrete masonry units composed of a combination of aggregate types or where plaster is applied directly to the concrete masonry shall be determined in accordance with ACI 216.1/TMS 0216. Lightweight aggregates shall have a maximum combined density of 65 pounds per cubic foot.
- h. See Note b. The equivalent thickness shall be permitted to include the thickness of cement plaster or 1.5 times the thickness of gypsum plaster applied in accordance with the requirements of Chapter 25.
- i. Concrete walls shall be reinforced with horizontal and vertical temperature reinforcement as required by Chapter 19.
- j. Studs are welded truss wire studs with 0.18 inch (No. 7 B.W. gage) flange wire and 0.18 inch (No. 7 B.W. gage) truss wires.
- k. Nailable metal studs consist of two channel studs spot welded back to back with a crimped web forming a nailing groove.
- l. Wood structural panels shall be permitted to be installed between the fire protection and the wood studs on either the interior or exterior side of the wood frame assemblies in this table, provided that the length of the fasteners used to attach the fire protection is increased by an amount not less than the thickness of the wood structural panel.
- m. For studs with a slenderness ratio, l_e/d , greater than 33, the design stress shall be reduced to 78 percent of allowable F_c . For studs with a slenderness ratio, l_e/d , not exceeding 33, the design stress shall be reduced to 78 percent of the adjusted stress F_c calculated for studs having a slenderness ratio l_e/d of 33.
- n. For properties of cooler or wallboard nails, see ASTM C514, ASTM C547 or ASTM F1667.
- o. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA 600 shall be accepted as if herein specified.
- p. NCMA TEK 5-8A shall be permitted for the design of fire walls.
- q. The design stress of studs shall be equal to not more than that obtained with a load duration factor of 1.0 ~~100 percent of the allowable F_e~~ calculated in accordance with Section 2306.

Reason Statement: The change in footnote q is only desired in order to clarify the existing provision. This is the only change presented here. The current wording is intended to not allow a load duration factor associated with shorter term loading being used, based on the type of loading applied during testing. The current wording of footnote q does not make it readily apparent that this is the intent, and is not coordinated with the terminology used for structural wood design.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Simply clarification of what is existing

FS100-21

IBC: TABLE 721.1(3)

Proponents: David P. Tyree, American Wood Council, representing AWC (dtyree@awc.org); Jason Smart, representing AWC (jsmart@awc.org)

2021 International Building Code

Revise as follows:

**TABLE 721.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS^{a, c}**

Portions of table not shown remain unchanged.

<p>31. Wood I-joist (minimum I-joist depth $9\frac{1}{4}$" with a minimum flange thickness of $1\frac{1}{2}$" and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of $\frac{3}{8}$" @ 24" o.c.</p>	<p align="center">31-1.1</p>	<p>Two layers of $\frac{1}{2}$" Type C gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1" Type S drywall screws spaced 12" o.c. and the face layer is fastened with $1\frac{5}{8}$" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. on the edges. Face layer edge joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. End joints centered on bottom flange of I-joists and offset a minimum of 48 inches from those of base layer. Face layer to also be attached to base layer with $1\frac{1}{2}$" Type G drywall screws spaced 8" o.c. with a 4" stagger, placed 6" from face layer end joints. Face layer wallboard joints taped and covered with joint compound. Screw heads covered with joint compound.</p>	<p align="center">--</p>	<p align="center">--</p>	<p align="center">Varies</p>	<p align="center">--</p>	<p align="center">--</p>	<p align="center">--</p>	<p align="center">--</p>
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For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 0.454 kg, 1 cubic foot = 0.0283 m³,

1 pound per square inch = 6.895 kPa, 1 pound per linear foot = 1.4882 kg/m.

- a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.
- b. Where the slab is in an unrestrained condition, minimum reinforcement cover shall be not less than $1\frac{5}{8}$ inches for 4 hours (siliceous aggregate only); $1\frac{1}{4}$ inches for 4 and 3 hours; 1 inch for 2 hours (siliceous aggregate only); and $\frac{3}{4}$ inch for all other restrained and unrestrained conditions.
- c. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard, and the joints on the face layer are reinforced.

Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing, and the entire surface is covered with not less than $\frac{1}{16}$ -inch gypsum veneer plaster.

- d. Slab thickness over steel joists measured at the joists for metal lath form and at the top of the form for steel form units.
- e. (a) The maximum allowable stress level for H-Series joists shall not exceed 22,000 psi.
(b) The allowable stress for K-Series joists shall not exceed 26,000 psi, the nominal depth of such joist shall be not less than 10 inches and the nominal joist weight shall be not less than 5 pounds per linear foot.
- f. Cement plaster with 15 pounds of hydrated lime and 3 pounds of approved additives or admixtures per bag of cement.
- g. Gypsum wallboard ceilings attached to steel framing shall be permitted to be suspended with $1\frac{1}{2}$ -inch cold-formed carrying channels spaced 48 inches on center, that are suspended with No. 8 SWG galvanized wire hangers spaced 48 inches on center. Cross-furring channels are tied to the carrying channels with No. 18 SWG galvanized wire hangers spaced 48 inches on center. Cross-furring channels are tied to the carrying channels with No. 18 SWG galvanized wire (double strand) and spaced as required for direct attachment to the framing. This alternative is applicable to those steel framing assemblies recognized under Note q.
- h. Six-inch hollow clay tile with 2-inch concrete slab above.
- i. Four-inch hollow clay tile with $1\frac{1}{2}$ -inch concrete slab above.
- j. Thickness measured to bottom of steel form units.
- k. Five-eighths inch of vermiculite gypsum plaster plus $\frac{1}{2}$ inch of approved vermiculite acoustical plastic.
- l. Furring channels spaced 12 inches on center.
- m. Double wood floor shall be permitted to be either of the following:
 - (a) Subfloor of 1-inch nominal boarding, a layer of asbestos paper weighing not less than 14 pounds per 100 square feet and a layer of 1-inch nominal tongue-and-groove finished flooring.
 - (b) Subfloor of 1-inch nominal tongue-and-groove boarding or $\frac{15}{32}$ -inch wood structural panels with exterior glue and a layer of 1-inch nominal tongue-and-groove finished flooring or $\frac{19}{32}$ -inch wood structural panel finish flooring or a layer of Type I Grade M-1 particleboard not less than $\frac{5}{8}$ -inch thick.
- n. The ceiling shall be permitted to be omitted over unusable space, and flooring shall be permitted to be omitted where unusable space occurs above.

- o. For properties of cooler or wallboard nails, see ASTM C514, ASTM C547 or ASTM F1667.
- p. Thickness measured on top of steel deck unit.
- q. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA 600 shall be accepted as if herein specified.

Reason Statement: Fire-resistance-rated wood-frame assemblies can be found in a number of sources including the *IBC*, Underwriters Laboratories (UL) *Fire Resistance Directory*, Intertek Testing Services' *Directory of Listed Products*, and the Gypsum Association's *Fire Resistance Design Manual*. The American Wood Council (AWC) and its members have tested a number of wood-frame fire-resistance-rated assemblies. This proposal is adding another tested assembly which is popular among designers and is being provided for the convenience of the building official. It is the same as Assembly WIJ-1.5 in the American Wood Council's publication titled *DCA3 - Fire-Resistance-Rated Wood-Frame Wall and Floor/Ceiling Assemblies*, which may be downloaded from the AWC website. Similar descriptions of successfully tested I-joint floor assemblies are provided in Table 721.1(3) for one-hour and two-hour fire-resistance-rated floor/ceiling assemblies. I-joists are required to comply with ASTM D5055, *Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists*.

Bibliography: *DCA3 – Fire-Resistance-Rated Wood-Frame Wall and Floor/Ceiling Assemblies*, American Wood Council, 2020, https://awc.org/pdf/codes-standards/publications/dca/AWC_DCA3_20200401_AWCWebsite.pdf

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal provides the IBC with another tested floor assembly for use by designers and building department personnel.

FS100-21

FS101-21

IBC: 722.1

Proponents: Jonathan Humble, American Iron and Steel Institute, representing American Iron and Steel Institute (jhumble@steel.org)

2021 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 and Appendix 4 of AISC 360.
4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.

Reason Statement: ANSI/AISC 360-16 *Specification for Structural Steel Buildings* is a consensus developed standard that applies to the design, fabrication, and erection of structural steel systems. Appendix 4 contains provisions for the design and evaluation of structural steel components, systems, and frames under fire conditions, and it includes methods of design to determine fire resistance or fire resistance rated protection (a) by analysis and (b) by qualification testing. The proposed revision to Section 722.1 will direct users to Appendix 4 for the steel-specific calculation procedures for fire resistance ratings. We are proposing to use this pointer method as it mirrors the other current pointer methods by the concrete, masonry, and timber provisions that appear in Section 722.1.

The upcoming 2022 edition of ANSI/AISC 360 will further consolidate existing steel-related provisions from other standards into one location. This will allow users to refer to one source for all steel-related calculation procedures for structural design and evaluation for design fire scenarios.

Bibliography: There are four attached files to this code change proposal. They are:

AISC-360-2022-Appendix-4-Prone-Draft

AISC-360-2022-Change-List-Section-12-Prone-Draft

AISC-360-2022-Summary-of-Revisions

AISC-360-2022-Description-of-Appendix-4

Cost Impact: The code change proposal will not increase or decrease the cost of construction

Any cost associated with this proposal will be borne at the owner's project requirement and/or design stages of a building project. Incorporating ANSI/AISC 360 Appendix 4 will provide the user with a greater number of options for achieving the required, or program required, minimum for fire resistance. In addition, this reference will allow the user the opportunity to examine and design more effectively through an efficient selection of fire protection materials versus choosing the conservative approach as shown in the prescriptive provisions of the building code. It will be up to the building owner to choose a method to apply in order to determine if the cost of construction will increase or decrease.

FS101-21

FS102-21

IBC: TABLE 722.2.1.4(1), TABLE 722.2.1.4(2)

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 International Building Code

Revise as follows:

TABLE 722.2.1.4(1)

MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF CAST-IN-PLACE OR PRECAST CONCRETE WALL

TYPE OF FINISH APPLIED TO CONCRETE OR CONCRETE MASONRY WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate concrete masonry: siliceous or carbonate; solid claybrick	Concrete: sand-lightweight concrete masonry: clay tile; hollow clay brick; concrete masonry units of expanded shale and < 20% sand	Concrete: lightweight concrete masonry: concrete masonry units of expanded shale, expanded clay, expanded slag, or pumice < 20% sand	Concrete masonry: concrete masonry units of expanded slag, expanded clay, or pumice
Portland cement-sand plaster	1.00	0.75 ^a	0.75 ^a	0.50 ^a
Gypsum-sand plaster	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.25	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm.

- a. For Portland cement-sand plaster ⁵/₈ inch or less in thickness and applied directly to the concrete or concrete masonry on the nonfire-exposed side of the wall, the multiplying factor shall be 1.00.

TABLE 722.2.1.4(2)
TIME ASSIGNED TO FINISH MATERIALS ON FIRE-EXPOSED SIDE OF CAST-IN-PLACE OR PRECAST CONCRETE WALL

FINISH DESCRIPTION	TIME^b (minutes)
Gypsum wallboard	
3/8 inch	10
1/2 inch	15
5/8 inch	20
2 layers of 3/8 inch	25
1 layer of 3/8 inch, 1 layer of 1/2 inch	35
2 layers of 1/2 inch	40
Type X gypsum wallboard	
1/2 inch	25
5/8 inch	40
Portland cement-sand plaster applied directly to concrete masonry	See Note a
Portland cement-sand plaster on metal lath	
3/4 inch	20
7/8 inch	25
1 inch	30
Gypsum sand plaster on 3/8-inch gypsum lath	
1/2 inch	35
5/8 inch	40
3/4 inch	50
Gypsum sand plaster on metal lath	
3/4 inch	50
7/8 inch	60
1 inch	80

For SI: 1 inch = 25.4 mm.

- a. The actual thickness of Portland cement-sand plaster, provided that it is 5/8 inch or less in thickness, shall be permitted to be included in determining the equivalent thickness of the masonry for use in Table 722.3.2.
- b. The time assigned is not a finish rating.

Reason Statement: Design professionals may cite Table 722.2.1.4(2) as justification for the added fire-resistance from one layer of 5/8 inch Type X gypsum wallboard to one side of a wood stud or steel stud wall assembly to increase the overall rating of the assembly by 40 minutes because this is the first table that references gypsum wallboard protection. However, the charging language in Section 722.2.1.4 states these time values are only applicable to cast-in-place or precast concrete walls. Section 722.6 provides more appropriate guidance.

The first part of this proposal is to modify the titles of Tables 722.2.1.4 (1) and 722.2.1.4 (2) and add clarifying language that these tables only apply to cast-in-place and precast concrete walls. This clarification in the title ensures that the reader understands that these time values can only be used for concrete type walls.

The second part of this proposal is to add a note to Table 722.2.1.4 (2) stating that the times found in the table are not associated with the finish ratings, as defined in the front of the UL Fire Resistance Directory. This note was taken directly from Table 722.6.2 (1). UL Designs have shown that the finish rating of 5/8 inch Type X gypsum wallboard is closer to 20-24 minutes rather than the 40 minutes assumed by the client. UL Design U332 states the finish rating of a single layer 5/8 inch Type X gypsum wallboard as 23 minutes.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. There will be no cost impact associated with this proposal as these changes are clarification in nature.

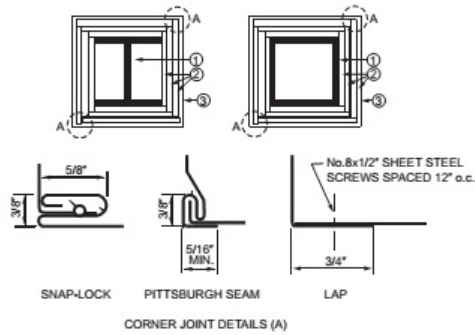
FS103-21

IBC: FIGURE 722.5.1(2), FIGURE 722.5.1(3), 722.5.1.2.1

Proponents: Tim Earl, representing The Gypsum Association (tearl@gbhinternational.com)

2021 International Building Code

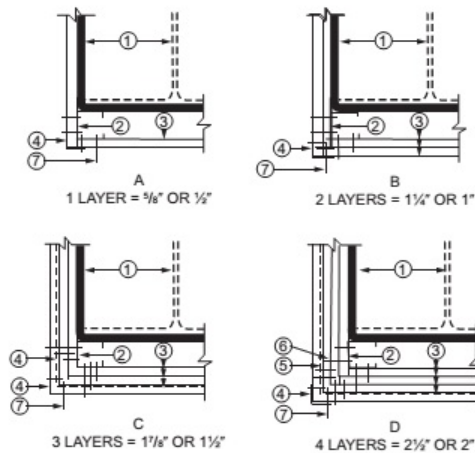
Revise as follows:



For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

1. Structural steel column, either wide flange or tubular shapes.
2. Type X gypsum board or gypsum panel products in accordance with ASTM C1177, C1178, C1278, C1396 or C1658. The total thickness of gypsum board or gypsum panel products calculated as h in Section 722.5.1.2 shall be applied vertically to an individual column using one of the following methods:
 1. As a single layer without horizontal joints.
 2. As multiple layers with horizontal joints not permitted in any layer.
 3. As multiple layers with horizontal joints staggered not less than 12 inches vertically between layers and not less than 8 feet vertically in any single layer. The total required thickness of gypsum board or gypsum panel products shall be determined on the basis of the specified fire-resistance rating and the weight-to-heated-perimeter ratio (W/D) of the column. For fire-resistance ratings of 2 hours or less, one of the required layers of gypsum board or gypsum panel product may be applied to the exterior of the sheet steel column covers with 1-inch long Type S screws spaced 1 inch from the wallboard edge and 8 inches on center. For such installations, 0.0149-inch minimum thickness galvanized steel corner beads with 1 $\frac{1}{2}$ -inch legs shall be attached to the wallboard with Type S screws spaced 12 inches on center.
3. For fire-resistance ratings of 3 hours or less, the column covers shall be fabricated from 0.0239-inch minimum thickness galvanized or stainless steel. For 4-hour fire-resistance ratings, the column covers shall be fabricated from 0.0239-inch minimum thickness stainless steel. The column covers shall be erected with the Snap Lock or Pittsburgh joint details. For fire-resistance ratings of 2 hours or less, column covers fabricated from 0.0269-inch minimum thickness galvanized or stainless steel shall be permitted to be erected with lap joints. The lap joints shall be permitted to be located anywhere around the perimeter of the column cover. The lap joints shall be secured with $\frac{1}{2}$ -inch-long No. 8 sheet metal screws spaced 12 inches on center. The column covers shall be provided with a minimum expansion clearance of $\frac{1}{8}$ inch per linear foot between the ends of the cover and any restraining construction.

FIGURE 722.5.1(2)
GYPSUM-PROTECTED STRUCTURAL STEEL COLUMNS WITH SHEET STEEL COLUMN COVERS



For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

1. Structural steel column, either wide flange or tubular shapes.
2. 1⁵/₈-inch deep studs fabricated from 0.0179-inch minimum thickness galvanized steel with 1⁵/₁₆ or 1⁷/₁₆-inch legs. The length of the steel studs shall be 1/2 inch less than the height of the assembly.
3. Type X gypsum board or gypsum panel products in accordance with ASTM C1177, C1178, C1278, C1396 or C1658. The total thickness of gypsum board or gypsum panel products calculated as *h* in Section 722.5.1.2 shall be applied vertically to an individual column using one of the following methods:
 1. As a single layer without horizontal joints.
 2. As multiple layers with horizontal joints not permitted in any layer.
 3. As multiple layers with horizontal joints staggered not less than 12 inches vertically between layers and not less than 8 feet vertically in any single layer. The total required thickness of gypsum board or gypsum panel products shall be determined on the basis of the specified fire-resistance rating and the weight-to-heated-perimeter ratio (W/D) of the column.
4. Galvanized 0.0149-inch minimum thickness steel corner beads with 1¹/₂-inch legs attached to the gypsum board or gypsum panel products with 1-inch-long Type S screws spaced 12 inches on center.
5. No. 18 SWG steel tie wires spaced 24 inches on center.
6. Sheet metal angles with 2-inch legs fabricated from 0.0221-inch minimum thickness galvanized steel.
7. Type S screws, 1 inch long, shall be used for attaching the first layer of gypsum board or gypsum panel product to the steel studs and the third layer to the sheet metal angles at 24 inches on center. Type S screws 1³/₄ inches long shall be used for attaching the second layer of gypsum board or gypsum panel product to the steel studs and the fourth layer to the sheet metal angles at 12 inches on center. Type S screws 2¹/₄ inches long shall be used for attaching the third layer of gypsum board or gypsum panel product to the steel studs at 12 inches on center.

FIGURE 722.5.1(3)

GYPSON-PROTECTED STRUCTURAL STEEL COLUMNS WITH STEEL STUD/SCREW ATTACHMENT SYSTEM

722.5.1.2.1 Attachment. The gypsum board or gypsum panel products shall be supported as illustrated in either Figure 722.5.1(2) for fire-resistance ratings of 4 hours or less, or Figure 722.5.1(3) for fire-resistance ratings of 3 hours or less.

Reason Statement: The IBC definitions for gypsum products were revised last cycle to match the correct terms used in industry publications. The definition of Gypsum Panel Product makes it clear that Gypsum Board is a subset of Gypsum Panel Product. As such, this is one of several proposals to remove Gypsum Board throughout the IBC whenever it reads as "Gypsum Board and Gypsum Panel Product" because the first item is a subset of the second item. This proposal covers all instances of the duplication in Chapter 7.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This simply removes redundant wording from the code.

FS104-21

IBC: TABLE 722.6.2(1)

Proponents: Tim Earl, representing The Gypsum Association (tearl@gbhinternational.com)

2021 International Building Code

Revise as follows:

TABLE 722.6.2(1)
TIME ASSIGNED TO WALLBOARD MEMBRANES ON WOOD FRAME^{a, b, c, d, e}

DESCRIPTION OF FINISH	TIME ^{e,f} (minutes)
3/8-inch wood structural panel bonded with exterior glue	5
1 5/32-inch wood structural panel bonded with exterior glue	10
1 9/32-inch wood structural panel bonded with exterior glue	15
3/8-inch gypsum wallboard	10
1/2-inch gypsum wallboard	15
5/8-inch gypsum wallboard	30
1/2-inch Type X gypsum wallboard	25
5/8-inch Type X gypsum wallboard	40
Double 3/8-inch gypsum wallboard	25
1/2-inch + 3/8-inch gypsum wallboard	35
Double 1/2-inch gypsum wallboard	40

For SI: 1 inch = 25.4 mm.

- a. These values apply only where membranes are installed on framing members that are spaced 16 inches o.c. or less.
- b. Gypsum wallboard installed over framing or furring shall be installed so that all edges are supported, except 5/8-inch Type X gypsum wallboard shall be permitted to be installed horizontally with the horizontal joints staggered 24 inches each side and unsupported but finished.
- c. On wood frame floor/ceiling or roof/ceiling assemblies, gypsum board shall be installed with the long dimension perpendicular to framing members and shall have all joints finished.
- d. The membrane on the unexposed side shall not be included in determining the fire resistance of the assembly. Where dissimilar membranes are used on a wall assembly, the calculation shall be made from the least fire-resistant (weaker) side.
- e. Fire-resistance ratings calculated for assemblies using this table shall be limited to not more than one hour. ~~The time assigned is not a finished rating.~~
- f. The time assigned is not a finished rating.

Reason Statement: This proposal inserts language to clarify the use of this table. Although this information is already stated in Section 7.6, it is far removed from the table itself (by 10 pages in the 2018 edition, for example). If a user simply opens the code book to this table, they may miss this important information. Specifically, this proposal adds the words “on wood frame” to the title, along with a footnote stating the limitations on fire resistance ratings calculated using this table.

Again, this is not new information. It is already in Section 7.6, but needs to be restated in the table for greater visibility.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal simply adds some clarification to the table with no change in requirements.

FS105-21

IBC: TABLE 722.6.2(3)

Proponents: Matthew Dobson, representing Vinyl Siding Institute (mdobson@vinylsiding.org)

2021 International Building Code

Revise as follows:

TABLE 722.6.2(3)
MEMBRANE^a ON EXTERIOR FACE OF WOOD STUD WALLS

SHEATHING	PAPER	EXTERIOR FINISH
⁵ / ₈ -inch T & G lumber ⁵ / ₁₆ -inch exterior glue <i>wood structural panel</i> ¹ / ₂ -inch gypsum wallboard ⁵ / ₈ -inch gypsum wallboard ¹ / ₂ -inch fiberboard	Sheathing paper	Lumber siding Wood shingles and shakes ¹ / ₄ -inch <i>fiber-cement</i> lap, panel or shingle siding ¹ / ₄ -inch <i>wood structural panels</i> -exterior type ¹ / ₄ -inch hardboard <u>Insulated Vinyl Siding</u> Metal siding <u>Polypropylene Siding</u> Stucco on metal lath Masonry veneer Vinyl siding
None	—	³ / ₈ -inch exterior-grade <i>wood structural panels</i>

For SI: 1 inch = 25.4 mm.

a. Any combination of sheathing, paper and exterior finish is permitted.

Reason Statement: This change adds two additional products, insulated vinyl siding and polypropylene siding, as options for choice as exterior finishes for the fire rating of calculated wood framed wall assemblies. Since the code allows any choice of products as noted in footnote a, it's worth listing these products to provide specifiers with additional options.

This list is for products that are on the outside of the assembly and the fire rating is from the inside in this section. So material choice is not necessarily relevant.

As further evidence, both products being proposed for addition have shown to be allowed as part of ASTM E119 rated assemblies and although it is not directly relevant here, it does support that they are safe to use with rated assemblies.

Finally, the acceptance of these code approved products are in line with fire rating performance principals based on Hermathy's Rule that note the addition of layers of materials will not decrease the the fire rating of assemblies.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This change simply provides more material choice options.

FS106-21

IBC: TABLE 722.6.2(5)

Proponents: Tony Crimi, representing North American Insulation Manufacturers Association (NAIMA), representing representing North American Insulation Manufacturers Association (NAIMA)

2021 International Building Code

Revise as follows:

**TABLE 722.6.2(5)
TIME ASSIGNED FOR ADDITIONAL PROTECTION**

DESCRIPTION OF ADDITIONAL PROTECTION	FIRE RESISTANCE (minutes)
<p>Add to the fire-resistance rating of wood stud walls if the spaces between the studs are completely filled with glass fiber or mineral wool batts weighing not less than 2 pounds per cubic foot (0.6 pound per square foot of wall surface) or rockwool or slag material wool batts weighing not less than 3.3 pounds per cubic foot (1 pound per square foot of wall surface), or cellulose insulation having a nominal density not less than 2.6 pounds per cubic foot.</p>	15

For SI: 1 pound/cubic foot = 16.0185 kg/m³.

Reason Statement: This code change updates the Table to equate the required minimum density for glass fiber and rock and slag wool fiber insulations. Since both have been included in the design currently, it is not necessary to retain the old minimum density value for rockwool and slag wool batts.

Current rock and slag wool insulation products are available at the 2 pcf density.

Cost Impact: The code change proposal will decrease the cost of construction. The code change will reduce the cost of construction where mineral wool is used.

FS106-21

FS107-21

IBC: SECTION 723 (New), 723.1 (New)

Proponents: Michael O'Brian, Chair, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Add new text as follows:

SECTION 723 STRUCTURAL FIRE ENGINEERING.

723.1 Performance-based structural fire design. Where the fire protection for the building structural system is designed using a performance-based method, the design shall be in accordance with ASCE/SEI 7 Appendix E

Reason Statement: American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) has developed industry consensus on performance-based structural fire design within the ASCE/SEI 7 standard [1] as demonstrated in their freely-available ASCE/SEI Design Guide (Performance-Based Structural Fire Design: Exemplar Designs of Four Regionally Diverse Buildings using ASCE 7-16, Appendix E) [2]. For the first time in U.S. practice, this standard establishes the process that enables designers to upgrade structures (e.g., structural connections) to be intrinsically safer to fire effects (e.g., restrained thermal expansion/contraction and large deflections) in order to better protect building occupants and firefighters from structural collapse due to uncontrolled fire events. Also, the standard is structured to formally integrate building officials into the design process in a similar manner as performance-based structural engineering is conducted for other design hazards (e.g., blast, seismic, and wind). In summary, this code change proposal adds the appropriate reference to the ASCE/SEI 7 standard for performance-based structural fire design.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Bibliography: [1] ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures, Appendix E: Performance-Based Design Procedures for Fire Effects on Structures, American Society of Civil Engineers: Structural Engineering Institute, 2016
[2] ASCE/SEI Performance-Based Structural Fire Design: Exemplar Designs of Four Regionally Diverse Buildings using ASCE 7-16, Appendix E, American Society of Civil Engineers: Structural Engineering Institute and Charles Pankow Foundation, 2020 <
<https://ascelibrary.org/doi/book/10.1061/9780784482698> >

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposed code change would have no direct impact on construction costs since alternative methods are already being conducted in practice and the performance-based structural fire design procedures in ASCE/SEI 7 represent current industry best practices.

FS107-21

FS108-21

IBC: 803.3

Proponents: Shamim Rashid-Sumar, National Ready Mixed Concrete Association, representing National Ready Mixed Concrete Association (ssumar@nrmca.org); Larry Williams, representing Steel Framing Industry Association (williams@steelframingassociation.org)

2021 International Building Code

Revise as follows:

803.3 Heavy timber exemption. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3. Exposed portions of *building elements* complying with the requirements for buildings of heavy timber construction in Section 602.4 or Section 2304.11 shall not be subject to *interior finish* requirements except in *interior exit stairways*, interior exit *ramps*, and exit passageways.

Reason Statement: The intent of this code change is to require exposed portions of building elements in buildings of Type IV construction to comply with the interior finish requirements of Chapter 8, unless the building is protected by automatic sprinklers. Exposed timber building elements in interior exit stairways, interior exit ramps, and exit passageways will continue to meet the interior finish requirements of Chapter 8, regardless of sprinkler protection.

Based on revisions in the 2018 edition of the IBC, exposed portions of building elements in Type IV construction in means of egress elements such as interior exit stairways, interior exit ramps, and exit passageways are required to comply with the interior finish requirements of Chapter 8. Exposed elements of Type IV construction in these means of egress components must meet the minimum interior wall and ceiling finish requirements of Table 803.13.

With the revisions to Type IV construction in the 2021, glue-laminated or cross-laminated timber may be used to form large portions of entire interior surfaces of rooms, corridors, and enclosures that form part of the necessary access to the means of egress. These spaces should also comply with interior finish requirements, particularly in any instances where the timber elements are exposed in buildings that are not protected with automatic sprinkler protection. The revisions to Type IV construction and allowance for portions of exposed timber in the 2021 revisions of the IBC are based on the provision of automatic sprinklers in the building.

Cost Impact: The code change proposal will increase the cost of construction

The code change may result in minimal increase in the cost of construction as interior finish with a lower flame spread index required would be required in buildings not equipped with automatic sprinkler protection. However, when considering overall cost impact, the proposal may decrease costs or losses over time due to fire incidents.

FS108-21

FS109-21

IBC: 202 (New), 803.13 (New), 803.13.1 (New)

Proponents: Marcelo Hirschler, representing self (mmh@gbhint.com)

2021 International Building Code

Add new definition as follows:

COATED WOOD PANEL . A wood panel on which a paint, coating, stain, or other surface treatment, has been applied, at a manufacturing facility, to the exposed surface so as to reduce the propagation of flame over the surface or the smoke developed.

Add new text as follows:

803.13 Coated wood panels. The application of paints, coatings, stains, or other surface treatments to a wood material shall not be an acceptable method to achieve the flame spread index or smoke developed index required for interior wall or ceiling finish materials, except as provided in 803.13.1.

803.13.1 Requirements. Where used as interior wall or ceiling finish, coated wood panels shall be listed and labeled as complying with one of the following:

1. The panels shall comply with the requirements of Section 803.1.1.1 when tested in accordance with NFPA 286, with the coated surface exposed.
2. The panels shall comply with the requirements of a Class A flame spread index and smoke developed index, when tested in accordance with ASTM E84 or UL 723, on the coated surface. Test specimen preparation and mounting shall be in accordance with ASTM E2579.

Reason Statement: There is no permission in the IBC to use coated materials as interior finish materials. The IBC allows (in 806.1) the use of fire-retardant coatings, but in existing buildings (only), as follows: "Fire-retardant coatings **in existing buildings** shall be maintained so as to retain the effectiveness of the treatment under service conditions encountered in actual use." This means that coated wood panels (i.e. panels with coatings that improve fire performance) are not recognized in the IBC code, other than for use in existing buildings.

It is fully appropriate not to allow the application of a paint or coating intended to improve fire performance on-site by someone who is not a registered or approved applicator, because such an application in a new building would not ensure a consistent application of a safe product.

This proposal would still not allow coatings to be applied on site. The proposal would incorporate into the code, as interior finish, panels that are coated wood panels that have been produced at a manufacturing facility and that have been listed and labeled as having complied with a Class A (both flame spread index and smoke developed index), based on testing to ASTM E84 or UL 723, or that have complied with the equivalent requirements of an interior finish tested to NFPA 286 with the acceptance criteria of section 803.1.1.1.

The IBC recognizes fire-retardant treated wood in Chapter 23 and it has a clarifying statement in 2303.2.2 that states: "The use of paints, coating, stains or other surface treatments is not an approved method of protection as required in this section." That clarification is fully appropriate since a coated wood product is not a product that complies with the requirements of a fire retardant treated wood product, which are clear in section 2303 and which require the product to be "impregnated" with chemical. Clearly, coatings do not impregnate the wood. This proposal does not affect that.

This proposal does not introduce any new standards not already in the IBC.

This will require renumbering of sections subsequent to 803.12.

Cost Impact: The code change proposal will increase the cost of construction

This proposal introduces new requirements for coated wood panels and has the potential to increase the cost of construction.

FS109-21

FS110-21

IBC: 909.20.1

Proponents: Ali Fattah, City of San Diego Development Services Department, representing City of San Diego Development Services Department (afattah@sandiego.gov)

2021 International Building Code

Revise as follows:

909.20.1 Access. Access to the *stairway* or *ramp* shall be by way of a vestibule or an open exterior balcony. The minimum dimension of the vestibule shall be not less than the required width of the *corridor* leading to the vestibule but shall not have a clear width of less than 44 inches (1118 mm) and shall not have a length of less than 72 inches (1829 mm) in the direction of egress travel into the stairway between the centerline of the doorways into the vestibule and stairway.

Reason Statement: This proposal resubmits FS-142-15 that was narrowly defeated during the online governmental voting process 94-59 and failed to gain 2/3 of the vote (report of hearings and voting results attached). The Fire Safety committee disapproval was due to poor figures (figures attached to this proposal were provided for PCH) in the original submittal and due to their belief was that the issue can be resolved with figures in the commentary. The commentary hints at what the code change proposal is after however ICC repeatedly states that the commentary is not the code. Speakers in opposition raised issues related to ADA and accessibility that were later found to be inaccurate. The assembly in Long Beach approved the code change however the OGV process was new at the time and we failed to mobilize the vote.

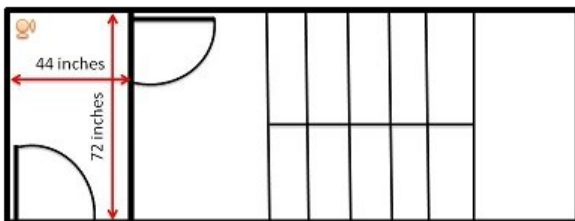
The proposed code change seeks to clarify the dimensional requirements in vestibules used to access stairway doors in smoke proof enclosures. A smoke proof enclosure is an interior exit stairway that is protected with a two-hour fire barrier and includes a vestibule separating the occupied story from the stairway. The vestibule seeks to keep smoke from migrating into the stairway portion due to egress by occupants and due to fire fighting operations. The dimensional requirements for the vestibule seek to allow sufficient distance between the doorway into the vestibule and into the stairway such that both doorways are not open at the same time. Additionally, the vestibule provides fire fighters with a safe area to attack a fire on the fire floor without compromising the smoke proof integrity of the stairway.

Both the handbook and the commentary conservatively dimension the 72 inch dimension to be perpendicular to the access doorway into the stairway from the vestibule. If the two doorways are not in line, offset or perpendicular to one another the direction of travel into the vestibule, within the vestibule and into the stairway can change and it does not appear reasonable to require 72 inch by 72 inch vestibules if sufficient space is provided to clear the doorways arcs.

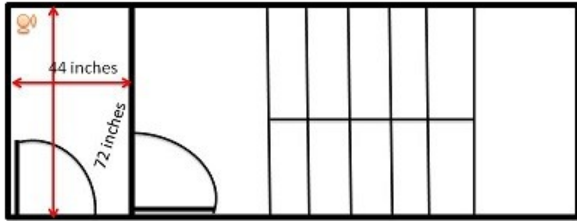
The code change also requires that the 44 inch width be a clear width for consistency with the requirements in Section 1003.3.3 in the event a standpipe is placed within the vestibule or pressurization ductwork is located within the vestibule.

We hope that the Fire Safety can approve this clarifying code change that is reflective of current practice in California.

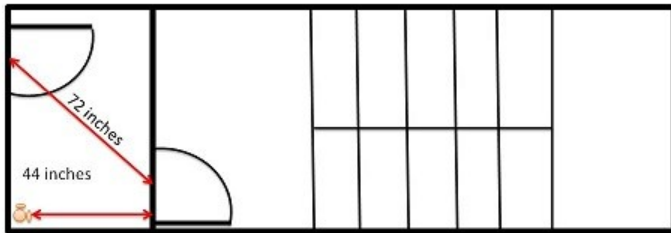
FS 142-15 Figure A
2015 IBC Code Complying



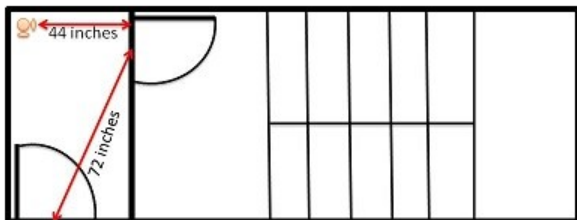
FS 142-15 Figure B
2015 IBC Code Complying



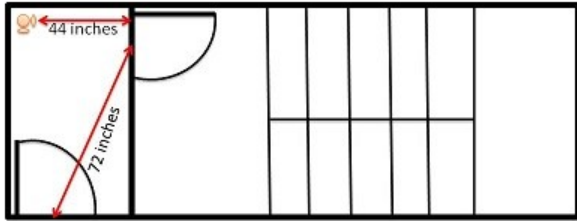
FS 142-15 Figure C
Proposed Code Change



FS 142-15 Figure D
Proposed Code Change



FS 142-15 Figure E Proposed Code Change



Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposed code change results in a re-arrangement of doors and does not increase the size of the vestibule, the length of walls or number or fire resistance rating for the doorways. It is not known if it will increase the cost of construction due to building layout issues, this is not determinate.

FS110-21

FS111-21

IBC: 909.20.2, 909.20.2.1, 909.20.2.2 (New), ASTM Chapter 35 (New)

Proponents: Tony Crimi, representing International Firestop Council

2021 International Building Code

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.

909.20.2.1 Door closers. Doors in a *smokeproof enclosure* shall be self- or automatic closing by actuation of a smoke detector in accordance with Section 716.2.6.6 and shall be installed at the floor-side entrance to the *smokeproof enclosure*. The actuation of the smoke detector on any door shall activate the closing devices on all doors in the *smokeproof enclosure* at all levels. Smoke detectors shall be installed in accordance with Section 907.3.

Add new text as follows:

909.20.2.2 Pressurized stair and vestibule air supply. 909.20.2.2 Pressurized stair and vestibule air supply. Where the installation of a fire damper will interfere with the operation of a required smoke control system in accordance with Section 909, ducts used to supply uncontaminated air to a smokeproof enclosure shall be protected with a shaft enclosure in accordance with Section 713 or a fire resistive metallic duct assembly tested in accordance with ASTM E2816. When installed, the required rating of a duct assembly tested in accordance with ASTM E2816 shall have equal F and T ratings not less than the assembly penetrated.

Add new standard(s) as follows:

ASTM

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

ASTM E2816: Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM E2816 Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: This proposal would add the option to install HVAC ducts installed to supply uncontaminated air for stairwell pressurization to be protected either with a shaft in accordance with section 713, a tested system in accordance with ASTM E2816 *Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems*, or any other approved alternative means.

The ASTM E2816 standard evaluates the fire performance of metallic duct systems based on the same fire exposure, principles and criteria for fire-resistance rating that are defined in ASTM E119. The ASTM E2816 standard has the ability to test the fire performance of HVAC ducts for both supply (pressurization) and return air, in the vertical and horizontal orientation, and includes the penetration firestop system installed. The fire performance of pressurization ducts are evaluated by both Condition A – Horizontal, and Condition B – Vertical, which are the test configurations appropriate for pressurization ducts. The ASTM E2816 standard was developed to establish requirements for fire resistive enclosure systems applied to metallic HVAC ducts in order to provide a tested alternate to required fire-resistance-rated shafts. When pressurization ducts are used, the protection is installed continuously from the air handling equipment to the air inlet and outlet terminals, so the penetration firestop systems installed in these ASTM E2816 protected ducts are included as part of the tested configuration A and configuration B systems. There are several systems currently Listed and in use for these applications.

Bibliography: ASTM E2816-20a, Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposal does not mandate any particular system, but provides several options for protection of these pressurization ducts, including currently approved methods.

FS111-21

FS112-21

IBC: 909.20, 909.20.4, 909.20.4.1, 909.20.4.2, 909.20.4.2.1, 909.20.4.3, 909.20.4.4, 909.20.7

Proponents: Valarie Evans, representing SNICC, SNBO (evansv@cityofnorthlasvegas.com)

2021 International Building Code

Revise as follows:

909.20 Smokeproof enclosures. Where required by Section 1023.12, a *smokeproof enclosure* shall be constructed in accordance with this section. A *smokeproof enclosure* shall consist of an *interior exit stairway* or *ramp* that is enclosed in accordance with the applicable provisions of Section 1023 and an open exterior balcony, ~~ventilated vestibule~~ or pressurized *stair* and pressurized entrance vestibule meeting the requirements of this section. Where access to the roof is required by the *International Fire Code*, such access shall be from the *smokeproof enclosure* where a *smokeproof enclosure* is required.

Delete without substitution:

~~**909.20.4 Mechanical ventilation alternative.** The provisions of Sections 909.20.4.1 through 909.20.4.4 shall apply to ventilation of *smokeproof enclosures* by mechanical means.~~

~~**909.20.4.1 Vestibule doors.** The door assembly from the building into the vestibule shall be a *fire door assembly* complying with Section 716.2.2.1. The door assembly from the vestibule to the *stairway* or *ramp* shall not have less than a 20-minute *fire protection rating* and shall meet the requirements for a smoke door assembly in accordance with Section 716.2.2.1. The door shall be installed in accordance with NFPA 105.~~

~~**909.20.4.2 Vestibule ventilation.** The vestibule shall be supplied with not less than one air change per minute and the exhaust shall be not less than 150 percent of supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate, tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches (152 mm) of the floor level. The top of the exhaust register shall be located at the top of the smoke trap but not more than 6 inches (152 mm) down from the top of the trap, and shall be entirely within the smoke trap area. Doors in the open position shall not obstruct duct openings. Duct openings with controlling *dampers* are permitted where necessary to meet the design requirements, but *dampers* are not otherwise required.~~

~~**909.20.4.2.1 Engineered ventilation system.** Where a specially engineered system is used, the system shall exhaust a quantity of air equal to not less than 90 air changes per hour from any vestibule in emergency operation mode and shall be sized to handle three vestibules simultaneously. Smoke detectors shall be located at the floor side entrance to each vestibule and shall activate the system for the affected vestibule. Smoke detectors shall be installed in accordance with Section 907.3.~~

~~**909.20.4.3 Smoke trap.** The vestibule ceiling shall be not less than 20 inches (508 mm) higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward moving air column. The height shall not be decreased unless *approved* and justified by design and test.~~

~~**909.20.4.4 Stairway or ramp shaft air movement system.** The *stairway* or *ramp shaft* shall be provided with a dampered relief opening and supplied with sufficient air to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) in the *shaft* relative to the vestibule with all doors closed.~~

Revise as follows:

909.20.7 Ventilating equipment. The activation of ventilating equipment required by the alternatives in Sections ~~909.20.4~~, 909.20.5 and 909.20.6 shall be by smoke detectors installed at each floor level at an *approved* location at the entrance to the *smokeproof enclosure*. When the closing device for the *stairway* and *ramp shaft* and vestibule doors is activated by smoke detection or power failure, the mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.3.

Reason Statement: This proposal will eliminate the mechanical ventilation alternative. Although the mechanical ventilation alternative has been in the IBC since inception, it seems unlikely this option is used very often, if at all. This is due to the complexity of the design and the additional equipment necessary to achieve the specified results.

There are two primary approaches to meet the mechanical ventilation option. One approach requires large supply and exhaust fans, as well as the associated ducts to serve all vestibules simultaneously. A second approach requires not only the supply and exhaust ducts, but also one supply and one exhaust damper in each vestibule. With this approach, each damper in every vestibule will have to properly configure for the system to function, as well as be monitored to confirm status.

Section 909.20.4.2 requires the vestibule exhaust to be at least 150 percent of supply. This means the vestibule is negative relative to the adjacent floor and smoke can be drawn into the vestibule. As such, this design concept actually contradicts the intent, which is to limit smoke intrusion into the exit enclosure.

Section 909.20.4.3 requires a minimum ceiling height of 20 inches above the door. With a minimum door opening height of 80 inches as required by

Section 1010.1.1, these constraints dictate a minimum of 8 feet 4 inches from the top of one slab to the bottom of the slab above. Adding another 6 inches for a reasonable slab thickness gives almost 9 foot slab-to-slab height. Although this may not be a hardship for most multi-story buildings, this will impact some designs.

Cost Impact: The code change proposal will decrease the cost of construction

Due to the complexity of this option, it is more expensive to design, construction, commission, and maintain than other recognized approaches for smokeproof enclosures.

FS112-21

FS113-21

IBC: 909.20.5

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 International Building Code

Revise as follows:

909.20.5 Stairway and ramp pressurization alternative. Where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, the vestibule is not required, provided that each *interior exit stairway* or *ramp* is pressurized to not less than 0.10 inch of water (25 Pa) and not more than 0.35 inches of water (87 Pa) in the *shaft* relative to the building floor of fire origin measured with all *interior exit stairway* and *ramp* doors closed under maximum anticipated conditions of stack effect and wind effect.

Reason Statement: Section 202 of the IBC defines "Building" as: Any structure utilized or intended for supporting or sheltering any occupancy. Using term "building" as a reference point to measure pressure differentials is ambiguous. The proposed change clearly defines the reference point. In addition, this change aligns with Section 4.6 NFPA 92 which states as follows:

*4.6.1 General. When stairwell pressurization systems are provided, the pressure difference between the **smoke zone** and the stairwell, with zero and the design number of doors open, shall be as follows:*

(1) Not less than the minimum pressure difference specified in 4.4.2

(2) Not greater than the maximum pressure difference specified in 4.4.2.2

NFPA 92, Section 3.3.25.2 defines Smoke Zone as: The smoke control zone in which the fire is located.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change is a clarification and does not have a cost impact.

FS113-21

FS114-21

IBC: 909.20.5.1 (New)

Proponents: Valarie Evans, representing SNICC, SNBO (evansv@cityofnorthlasvegas.com)

2021 International Building Code

Add new text as follows:

909.20.5.1 Stair pressurization relief damper. A controlled relief vent capable of discharging a minimum of 2,500 cfm (1180 L/s) of air at the design pressure difference shall be located in the upper portion of the pressurized stair enclosure.

Reason Statement: The requirement for a dampered relief opening capable of discharging at least 2500 cfm (already located in 2021 IBC Section 909.20.6.3) allows a safety factor for stair pressurization to compensate for doors opening and closing. The dampered opening relieves excessive pressure when doors are opened and closed and reduces the potential for over pressurization. Further, if smoke does infiltrate the stair, the dampered relief allows smoke to vent to atmosphere.

This is an overpressure feature that only opens when the pressure in the stair sufficiently exceeds the required 0.10 inches of water pressure. This design constraint helps compensate for pressure differences created by stack effect by requiring fans to provide a slightly higher flow and pressure than needed. Depending on the height of the stair and design of the pressurization system, this option may even allow omission of pressure sensors and variable speed fans designed to compensate for stack effect conditions that vary through the year.

Cost Impact: The code change proposal will decrease the cost of construction

This additional requirement is expected to decrease construction cost as described in the preceding justification statement.

FS114-21

FS115-21

IBC: 909.20.6.4 (New)

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 International Building Code

Add new text as follows:

909.20.6.4 Smoke Detection. The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system.

Reason Statement: Section 909.21.4.2 for elevator pressurization systems requires a smoke detector that will automatically shut down the fans when smoke is detected within the system. The ICC Commentary to this section states:

The airflow must be free of smoke or it will only increase the likelihood of smoke spreading through-out the building. The smoke detector required by this section should be located on the intake side of the blower fan.

NFPA 92, Sections 6.4.6.2 states:

6.4.6.2.1 A smoke detector shall be provided in the air supply to the pressurized stairwell.

6.4.6.2.2 On detection of smoke in the air supply, the supply fan(s) shall be stopped.

The intent of stair pressurization systems is to maintain a tenable environment within the stair enclosures to exit discharge. A fire on the roof or in the fan, can result in smoke entering the stair enclosure.

To maintain consistency with NFPA 92, smoke detection should be provided that at the stair pressurization system.

Cost Impact: The code change proposal will increase the cost of construction

The Cost impact will be nominal per stair pressurization fan, consisting of one duct mounted smoke detector or area detector at the top of the enclosure, and controls.

FS115-21

FS116-21

IBC: 909.21

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 International Building Code

Revise as follows:

909.21 Elevator hoistway pressurization alternative. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with Sections 909.21.1 through 909.21.11. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios in accordance with Section 909.4.7. All components/systems associated with the means of mitigating adverse interaction shall comply with the applicable Sections of 909.

Reason Statement: Multiple published papers identify how elevator hoistway pressurization systems will impact other smoke controls systems serving high-rise buildings, including stair pressurization. Due to the high leakage factors of both open and closed elevator doors, a large volume of airflow must be introduced into the elevator hoistway to maintain the prescribed +0.10 inches of water (25 Pa) for elevator pressurization systems on all levels. As documented in the referenced papers, unless, the air introduced into the building by the elevator pressurization is relieved to the exterior, the prescribed pressures cannot be maintained to the pressurized stair enclosures. With the low exterior leakage factor of modern buildings to meet energy code requirements, this issue is further compounded.

The means of relieving the air can either mechanical systems or relief dampers at the exterior of the building. The volume of air must be calculated using smoke control models such as CONTAM.

While Section 909.4.7 specifically requires the engineer to consider the interaction of multiple systems, the need should be emphasized when the building is the building utilizes elevator pressurization to protect the hoistway. As the components/systems utilized to mitigate the impact are critical to the functionality of the system, the language simply clarifies the entire system must comply with the provisions of Section 909.

Bibliography: D.C. Bowers, J.R. Ellison, D.E. Beasley and R.S. Miller: Department of Mechanical EngineeringClemson University. The 8th International Conference on Performance-Based Codes and FireSafety Design Methods, Society of Fire Protection Engineers, Numerical Study of Elevator and Stairwell Pressurization Systems Using Detailed Building Models: Lund, Sweden; , June 16-18, 2010
Miller, R.S. and Beasley, D.E., Smoke Control by Pressurization in Stairwells and Elevator Shafts, The Singapore Engineer, 6-11, February 2009

Miller, R.S. and Beasley, D.E., On Stairwell and Elevator Shaft Pressurization for Smoke

Cost Impact: The code change proposal will not increase or decrease the cost of construction

There are number of variables that determine the relief required and the method of providing the relief is dependent upon the architectural features of the building. This proposed change is only intended to provide clarification to other provisions of the Code

FS116-21

FS117-21

IBC: 909.21.3, ASTM Chapter 35 (New)

Proponents: Tony Crimi, representing International Firestop Council

2021 International Building Code

Revise as follows:

909.21.3 Ducts for system. Any duct system that is part of the pressurization system shall be protected with the same *fire-resistance rating* as required for the elevator *shaft* enclosure.

Exception: Ducts tested and listed in accordance with ASTM E2816 having equal F and T ratings not less than the assembly being penetrated.

Add new standard(s) as follows:

ASTM

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

ASTM E2816: Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM E2816 Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: This proposal adds the option to install tested and Listed pressurization ducts that supply uncontaminated air for stairwell pressurization to be enclosed with an ASTM E2816 tested system.

The ASTM E2816 standard evaluates the fire performance of metallic duct systems based on the same fire exposure, principles and criteria for fire-resistance rating that are defined in ASTM E119. The ASTM E2816 Standard has the ability to test the fire performance of HVAC ducts for both supply (pressurization) and return air, in the vertical and horizontal orientation, and includes the penetration firestop system installed. The fire performance of pressurization ducts are evaluated by both Condition A – Horizontal, and Condition B – Vertical,, which are the test configurations appropriate for pressurization ducts.

The ASTM E2816 standard was developed to establish requirements for fire resistive enclosure systems applied to metallic HVAC ducts in order to provide a tested alternate to required fire-resistance-rated shafts. When these pressurization ducts are used, the protection is installed continuously from the air handling equipment to the air inlet and outlet terminals, so the penetration firestop systems installed in these ASTM E2816 protected ducts are included as part of the tested Condition A and Condition B systems. There are several systems currently Listed and in use for these applications.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal only adds an additional option to existing requirements.

FS117-21

FS118-21

IBC: 909.21.6

Proponents: Jeffrey S. Grove, P.E. FSFPE, Jensen Hughes, representing Jensen Hughes (jgrove@jensenhughes.com)

2021 International Building Code

Revise as follows:

909.21.6 Activation of pressurization system. The elevator pressurization system shall be activated upon activation of either the building fire alarm system or the elevator lobby smoke detectors. ~~Where both a building fire alarm system and elevator lobby smoke detectors are present, each shall be independently capable of activating the pressurization system.~~

Reason Statement: 1. Section 909.21.1 of the IBC requires the elevator hoistways to be pressurized to *maintain a minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all elevator cars at the floor of recall and all hoistway doors on the floor of recall open and all other hoistway doors closed.* Section 909.21.1 requires the opening and closing of hoistway doors at each level to be demonstrated as part of the testing process.

Section 3003.2 of the IBC states: *Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1/CSA B44.*

ANSI/ASME A17.1, Section 2.27.3.2.1 (2013 and 2016 Editions) states:

In jurisdictions not enforcing the NBCC, smoke detectors or other automatic fire detectors in environments not suitable for smoke detectors (fire alarm initiating devices) used to initiate Phase I Emergency Recall Operation shall be installed in conformance with the requirements of NFPA 72, and shall be located

- (a) *at each elevator lobby served by the elevator*
- (b) *In the associated elevator machine room, machinery space containing a motor controller or driving machine, control space, or control room*
- (c) *In the elevator hoistway, when sprinklers are located in those hoistways*

2. Section 21.3.3 of NFPA 72 (2013 through 2019 Editions) states: *Unless otherwise required by the authority having jurisdiction, only the elevator lobby, elevator hoistway, and elevator machine room smoke detectors, or other automatic fire detection as permitted by 21.3.7, and initiating devices used to initiate shutdown of elevator power in accordance with Section 21.4 shall be used to recall elevators for fire fighters' service.*

As 909.21.1 states the pressures are to be measured when the elevators cars are open on the floor of recall, and 909.21.6 requires both lobby smoke detectors and any building alarm to activate the elevator pressurization, this would suggest that any alarm would be required to recall the elevators. As noted above, ASME A17.1 and NFPA 72 only permits elevator recall upon activation of elevator lobby smoke detector, elevator machine room smoke detector, or a smoke detector located within the elevator hoistway.

3. Open elevator doors on the floor of recall can discharge approximately 6,000 cfm per door which can equate up to a 24,000-cfm loss for a four-car elevator hoistway. As IBC Section 909.21 requires the pressures to be measured when the elevators are on the floor of recall, this loss of air must be considered when calculating the fan size to maintain the pressures as prescribed in Section 909.21.

When the elevator pressurization system activates upon receipt of an alarm signal from a fire alarm initiating device that does not activate recall operations, the pathway to relieve the air is significantly restricted and will result in over-pressurizing the hoistway, thereby exceeding the prescribed pressure differentials. In addition, when an elevator door is opened to load or unload occupants, the open door provides a pathway that can cause an opposing force on the elevator door, thereby preventing the door from re-closing. In all cases, the variance between recall and non-recall operation will adversely impact the performance of the elevator pressurization system. The severity of the impact is dependent upon a number of variables. These include the following: The size of the pressurization fan. The height of the hoistway. The size of the hoistway (number of cars). The location of the elevator cars at the time of alarm. The number of elevator cars open and closed. When elevators are not in recall operation, they are generally constantly moving throughout the building with doors opening and closing. There is not an effective or repeatable method of designing the elevator pressurization to consider all of these variables. 4. Depending on the occupancy type, the quantity of manual or automatic fire alarm initiating devices that will recall the elevators can represent a small percentage of the total number devices. 5. When hoistway opening protection is provided utilizing an enclosed elevator lobby in accordance with Section 3006.3, the elevator lobby doors are generally provided with automatic closing devices (magnetic hold-open devices) that release in accordance with Section 907.3. Section 907.3 references NFPA 72 for the requirements to release the doors. NFPA 72 Section 17.7.5.6 (*Smoke Detectors for Door Release Service*) only requires the detector to be within 5 feet of the respective door to release the door. The Code does not require any building alarm to

release all of the doors on all floors. The requirement for activating the elevator pressurization should be the same as the other means of providing opening protection for the hoistway.

The fundamental intent of elevator hoistway pressurization is to provide an alternate means of opening protection for the elevator shaft enclosure to prevent smoke migration. The smoke detector in the lobby will activate prior to any significant amount of smoke entering into the hoistway. When these detectors initiate an alarm, the elevators will recall, and elevator pressurization system will activate to mitigate smoke migration in the hoistway.

Cost Impact: The code change proposal will decrease the cost of construction

Implementing this code change will reduce cost to design and construct a means of attempting to mitigate the impact of the elevators in recall and normal operation.

FS118-21

FS119-21

IBC: 910.2.1

Proponents: Andrew Bevis, National Fire Sprinkler Association, representing National Fire Sprinkler Association (bevis@nfsa.org); Jeffrey Hugo, representing NFSA (hugo@nfsa.org)

2021 International Building Code

Revise as follows:

910.2.1 Group F-1 or S-1. Smoke and heat vents installed in accordance with Section 910.3 or a mechanical smoke removal system installed in accordance with Section 910.4 shall be installed in buildings and portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m²) of ~~undivided~~ undivided area undivided by draft curtains 4 feet (1.8 m) or greater in depth or walls constructed in accordance with Sections 706, 707, 708, 709, or 710. In occupied portions of a building equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 where the upper surface of the *story* is not a roof assembly, a mechanical smoke removal system in accordance with Section 910.4 shall be installed.

Exception: Group S-1 aircraft repair hangars.

Reason Statement: Per the commentary for 910.2.1, "The code is not clear on what is meant by the term "undivided area." However, the intent is to provide the ability to manage the smoke in large spaces. Draft curtains or potentially any physical separation (regardless of rating) would provide such division." The commentary goes on to specify what constitutes construction that bounds smoke and the passage of smoke and it states that draft curtains are typically 6-feet in depth. NFPA 204, the Standard for Smoke and Heat Venting requires draft curtains to be 20% of the total ceiling height. For example, a 40 ft. ceiling would have an 8 ft. draft curtain, 30 ft. = 6 ft. draft curtain, 20 ft. = 4 ft. draft curtain. Having construction requirements in the commentary is a clear indication that the code text needs some prescriptive requirements. The proposal will provide additional language to section 910.2.1 that clarifies the requirements of what constitutes a divided area by putting requirements on draft curtain depth and the other passive systems found in Chapter 7.

Cost Impact: The code change proposal will increase the cost of construction

This proposal brings clarification to the issue the commentary raises. It could increase the cost of construction where the current code applied undivided area lacks a separation. This proposal provides a prescriptive method to divide the area with code recognized boundaries for smoke and heat vent installations.

FS119-21

FS120-21

IBC: [A] 107.2.4, [A] 110.3.9, SECTION 202, SECTION 1401, 1401.1, SECTION 1402, 1402.1, 1402.2, 1402.5, SECTION 1403, 1403.13, TABLE 1404.3(3), 1404.4, [BS] 1404.17, 1406.8, 1406.12, 2603.5.5, 3113.3

Proponents: Michael O'Brian, Chair, representing FCAC (fcac@iccsafe.org); Marcelo Hirschler, GBH International, representing self (mmh@gbhint.com)

2021 International Building Code

Revise as follows:

[A] 107.2.4 Exterior wall assembly envelope. *Construction documents* for all buildings shall describe the *exterior wall assembly envelope* in sufficient detail to determine compliance with this code. The *construction documents* shall provide details of the *exterior wall assembly envelope* as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive barrier and details around openings.

The *construction documents* shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the *construction documents* maintain the weather resistance of the *exterior wall assembly envelope*. The supporting documentation shall fully describe the *exterior wall assembly system* that was tested, where applicable, as well as the test procedure used.

[A] 110.3.9 Energy efficiency inspections. Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: building thermal envelope insulation *R*- and *U*-values, *fenestration U*-value, duct system *R*-value, and HVAC and water-heating equipment efficiency.

[BF] CONTINUOUS INSULATION (ci). Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior, or is integral to any opaque surface of the building thermal envelope.

[BF] EXTERIOR WALL ASSEMBLY ENVELOPE. A system, ~~or assembly~~ of including the ~~exterior wall,~~ exterior wall covering, framing and components, including exterior wall finish materials, such as weather-resistive barriers, air barriers, and insulating materials. This system ~~that~~ provides protection of the building structural members, ~~including framing and sheathing materials,~~ and conditioned interior space, from the detrimental effects of the exterior environment.

SECTION 1401 GENERAL.

Revise as follows:

1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for *exterior walls; exterior wall assemblies, exterior wall coverings; exterior wall openings; exterior windows and doors; and architectural trim.*

SECTION 1402 PERFORMANCE REQUIREMENTS.

Revise as follows:

1402.1 General. The provisions of this section shall apply to *exterior walls, exterior wall coverings* and components thereof.

1402.2 Weather protection. ~~Exterior walls shall provide the building~~ Buildings shall be provided with a weather-resistant *exterior wall assembly envelope*. The *exterior wall assembly envelope* shall include flashing, as described in Section 1404.4. The *exterior wall assembly envelope* 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. 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 envelope* 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 envelope~~* 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 ~~envelope~~* 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 ~~envelope~~*, joints at the perimeter of openings or intersections of terminations with dissimilar materials.

- 2.1. *Exterior wall ~~envelope~~* 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 ~~envelope~~* test assemblies shall be not less than 4 feet by 8 feet (1219 mm by 2438 mm) in size.
- 2.3. *Exterior wall ~~envelope test~~* assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (0.297 kN/m²).
- 2.4. *Exterior wall ~~envelope 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.

1402.5 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. ~~Walls~~ *Exterior walls* in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has ~~a~~ an exterior wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1404.2.
2. ~~Walls~~ *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/m², a total heat release of less than 20 MJ/m² 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/m².
 - 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.

SECTION 1403 MATERIALS.

Revise as follows:

1403.13 Foam plastic insulation. Foam plastic insulation used in *exterior wall ~~covering~~ assemblies* shall comply with Chapter 26.

**TABLE 1404.3(3)
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:^{a, b}
4	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with <i>R</i> -value $\geq R2.5$ over 2 × 4 wall Continuous insulation with <i>R</i> -value $\geq R3.75$ over 2 × 6 wall
5	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with <i>R</i> -value $\geq R5$ over 2 × 4 wall Continuous insulation with <i>R</i> -value $\geq R7.5$ over 2 × 6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with <i>R</i> -value $\geq R7.5$ over 2 × 4 wall Continuous insulation with <i>R</i> -value $\geq R11.25$ over 2 × 6 wall
7	Continuous insulation with <i>R</i> -value $\geq R10$ over 2 × 4 wall Continuous insulation with <i>R</i> -value $\geq R15$ over 2 × 6 wall
8	Continuous insulation with <i>R</i> -value $\geq R12.5$ over 2 × 4 wall Continuous insulation with <i>R</i> -value $\geq R20$ over 2 × 6 wall

- a. Vented cladding shall include vinyl lap siding, polypropylene, or horizontal aluminum siding, brick veneer with airspace as specified in this code, and other approved vented claddings.
- b. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class III vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the building thermal envelope requirements of the International Energy Conservation Code.

1404.4 Flashing. Flashing shall be installed in such a manner so as to prevent moisture from entering the exterior wall or to redirect that moisture to the surface of the exterior wall covering finish or to a water-resistive barrier complying with Section 1403.2 and that is part of a means of drainage complying with Section 1402.2. Flashing shall be installed at the perimeters of exterior door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim. Where self-adhered membranes are used as flashings of fenestration in exterior wall assemblies, those self-adhered flashings shall comply with AAMA 711. Where fluid applied membranes are used as flashing for exterior wall openings, those fluid applied membrane flashings shall comply with AAMA 714.

[BS] 1404.17 Fastening. Weather boarding and exterior wall coverings shall be securely fastened with aluminum, copper, zinc, zinc-coated or other approved corrosion-resistant fasteners in accordance with the nailing schedule in Table 2304.10.2 or the approved manufacturer's instructions. Shingles and other weather coverings shall be attached with appropriate standard-shingle nails to furring strips securely nailed to studs, or with approved mechanically bonding nails, except where sheathing is of wood not less than 1-inch (25 mm) nominal thickness or of wood structural panels as specified in Table 2308.6.3(3).

1406.8 Fire-resistance rating. Where MCM systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: MCM systems that are part of an exterior wall assembly envelope not containing foam plastic insulation and are installed on the outer surface of a fire-resistance-rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly, shall not be required to comply with this section.

1406.12 Foam plastic insulation. Where MCM systems are included in an exterior wall assembly envelope containing foam plastic insulation, the exterior wall assembly envelope shall also comply with the requirements of Section 2603.

2603.5.5 Vertical and lateral fire propagation. The exterior wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

Exceptions:

1. One-story buildings complying with Section 2603.4.1.4.

2. ~~Wall~~ Exterior wall assemblies where the foam plastic insulation is covered on each face by not less than 1-inch (25 mm) thickness of masonry or concrete and meeting one of the following:

2.1. There is no airspace between the insulation and the concrete or masonry.

2.2. The insulation has a *flame spread index* of not more than 25 as determined in accordance with ASTM E84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).

3113.3 Manufacturer's data plate. Each relocatable module shall have a data plate that is permanently attached on or adjacent to the electrical panel, and shall include the following information:

1. Occupancy group.
2. Manufacturer's name and address.
3. Date of manufacture.
4. Serial number of module.
5. Design *roof live load*, design floor *live load*, snow *load*, wind and seismic design.
6. *Approved* quality assurance agency or *approved* inspection agency.
7. Codes and standards of construction.
8. ~~Envelope thermal~~ Thermal resistance values of the building thermal envelope.
9. Electrical service size.
10. Fuel-burning equipment and size.
11. Special limitations if any.

Reason Statement: The proposed changes above address every instance in the 2021 IBC where the terms "exterior wall", "exterior wall assembly", "exterior wall envelope" and "exterior wall covering" (as well as "thermal envelope" and "building thermal envelope" are used (with some exceptions because the correct term is used and there is no need to look at them in more detail). The proposed changes here are simple clarification, since there is some confusion as to the meaning of the terms, and the proposal does not intend to make any technical changes. The concept in these proposed changes is that the code should reference the exterior wall unless it refers to a specific issue associated with testing or a similar aspect.

The reference to insulation is intended to encompass any continuous insulation and cavity insulation in walls.

Having discussed this issue with testing labs it has become clear that NFPA 285 fire tests are conducted on the entire wall assembly (including framing and sheathing), wherefore, it is best to eliminate the term "exterior wall envelope", since the IBC definition is not consistent with the way the term is used in the field and there is disagreement over the meaning of the term. Therefore, the proposed changes below eliminate the term "exterior wall envelope" and replace it by either exterior wall or exterior wall assembly (or even exterior wall covering, if applicable). The exterior wall assembly is pretty much the same as the exterior wall, but, in view of the fact that the "exterior wall" is described in the code based on an exterior wall not being a fire wall and an exterior wall having a slope of 60 degrees or more, it is best to retain both terms. This proposal eliminates the term "exterior wall envelope" from the IBC, but references still exist in the IRC and IEBC (to be dealt with in Group B, if appropriate).

The exterior wall covering is the outer layer of the exterior wall assembly, which means it is a product, such as an MCM, an EIFS, an HPL or a siding, as shown in the definition.

The term building thermal envelope (currently described as "thermal envelope" in IBC Table 1404.3(3) or "building envelope" in IBC definitions and IBC Section 110.3.8) should be related only to thermal protection. The term "building thermal envelope" should be used. It is defined in the IECC as: ***BUILDING THERMAL ENVELOPE.*** *The basement walls, exterior walls, floors, ceilings, roofs and any other building element assemblies that enclose conditioned space or provide a boundary between conditioned space and exempt or unconditioned space.*

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction
No cost impact because the changes are editorial in nature.

FS121-21

IBC: 1402.5

Proponents: Christopher Athari, Hoover Treated Wood Products, representing Hoover Treated Wood Products (cathari@frtw.com); James Gogolski, representing self (jgogolski@frtw.com)

2021 International Building Code

Revise as follows:

1402.5 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. Walls in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has a wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1404.2.
2. 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/m², a total heat release of less than 20 MJ/m² 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/m².
 - 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 shall comply with Exception 1 or Exception 2.

Reason Statement: 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 listing for an FRTW lumber and plywood assembly. Demonstrating compliance with NFPA 285 (UL-EWS0045).

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This code change proposal will not increase or decrease the cost of construction. There is a potential for construction savings where FRTW use was denied due to existence of a combustible water-resistive barrier.

FS121-21

FS122-21

IBC: 1402.5 (New), 1402.5.1 (New), 1402.5.2 (New), 1402.5.3 (New), 1402.5.4 (New), 1402.5.5 (New), 1402.5, [BS] 1402.6, [BS] 1402.7

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Add new text as follows:

1402.5 Vertical and lateral flame propagation. Exterior walls on buildings of Type I, II, III and IV construction that are greater than 40 feet (12,192 mm) in height above grade plane and 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, as applicable. Where compliance with NFPA 285 and associated acceptance criteria is required in Sections 1402.5.1 through 1402.5.5, 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 Materials (MCM). Exterior walls containing MCM systems shall comply with Section 1406.

1402.5.3 Exterior insulation and finish system (EIFS). Exterior walls of any height above grade plane containing EIFS shall comply with Section 1407.

1402.5.4 High-pressure decorative exterior-grade compact laminate (HPL) system. Exterior walls containing an HPL system shall comply with Section 1408.

1402.5.5 Foam Plastic Insulation. Exterior walls of any height above grade plane containing foam plastic insulation shall comply with Section 2603.5.

Revise as follows:

~~1402.5~~ **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. Walls in which the *water-resistive barrier* is the only combustible component and the *exterior wall* has a wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1404.2.
2. 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/m², a total heat release of less than 20 MJ/m² 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/m².
 - 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.

[BS] ~~1402.6~~ **1402.7 Flood resistance.** For buildings in *flood hazard areas* as established in Section 1612.3, *exterior walls* extending below the elevation required by Section 1612 shall be constructed with flood-damage-resistant materials.

[BS] ~~1402.7~~ **1402.8 Flood resistance for coastal high-hazard areas and coastal A zones.** For buildings in *coastal high-hazard areas* and coastal A zones as established in Section 1612.3, electrical, mechanical and plumbing system components shall not be mounted on or penetrate through *exterior walls* that are designed to break away under *flood loads*.

Reason Statement: This proposal 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. The existing Section 1402.5 (to become 1402.6) provides requirements for exterior walls with combustible water resistive barriers as the only combustible component but in the absence of a section before it indicating that exterior wall assemblies containing combustible materials must be tested to NFPA 285 and providing a road map to send the code user to the appropriate sections, some users may not be clear on the full applicability. In the IBC now:

Section 1406 provides comprehensive requirements for MCM systems, including use on exterior walls of Types I, II, III and IV construction

Section 1407 provides comprehensive requirements for EIFS systems that includes compliance with "...other applicable requirements of Chapters 7, 14, 16 and 26." (Section 1407.1) and compliance with ASTM E2568 (Section 1407.2).

Section 1408 provides comprehensive requirements for HPL systems, including use on exterior walls of Types I, II, III and IV construction

Section 2603.5 provides comprehensive requirements for foam plastic insulation, including use on exterior walls of Types I, II, III and IV construction. In this case, exterior walls of any height must be tested to NFPA 285.

With regard to other sections in Chapters 14 and 26 dealing with materials used in exterior wall assemblies but not with the full assembly, the following applies. :

Sections 1403 contains specific requirements for some materials used for the construction of exterior walls

Section 1405.1 contains specific requirements for combustible exterior wall coverings

Sections 2606 through 2611 contain specific requirements for various types of light transmitting plastics. Other sections in Chapter 26 contain specific requirements for other plastic materials.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The changes in this proposal are a road map that clarify the intent of the code.

FS122-21

FS123-21

IBC: 1402.5 (New), 1402.5.1 (New), 1402.5.2 (New), 1402.5.3 (New), 1402.5.4 (New), 1402.5.5 (New)

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance
(jgreenwald@operativegreenwald.com)

2021 International Building Code

Add new text as follows:

1402.5 Vertical and lateral flame propagation. Exterior wall assemblies of buildings of Type I, II, III or IV construction that contain a combustible exterior wall covering, combustible water-resistive barrier, or combustible insulation shall be tested in accordance with and comply with the acceptance criteria of NFPA 285 and shall comply with sections 1402.5.1 through 1402.5.5, as applicable. Combustibility shall be determined in accordance with Section 703.3. Plastics, other than foam plastic insulation, shall comply with the applicable provisions of Chapter 26.

1402.5.1 Water-resistive barriers. Exterior wall assemblies containing a combustible water-resistive barrier shall comply with Section 1402.6.

1402.5.2 Metal Composite Material (MCM) exterior wall coverings. Exterior wall assemblies greater than 40 feet in height above grade plane with an MCM exterior wall covering shall comply with Section 1406.

1402.5.3 Exterior Insulation and Finish Systems (EIFS) exterior wall coverings. Exterior wall assemblies of any height above grade plane with an EIFS exterior wall covering shall comply with Section 1407.

1402.5.4 High-Pressure Decorative Exterior-Grade Compact Laminate (HPL) exterior wall coverings. Exterior wall assemblies greater than 40 feet in height above grade plane with an HPL exterior wall covering shall comply with Section 1408.

1402.5.5 Foam Plastic Insulation. Exterior wall assemblies of any height above grade plane containing foam plastic insulation shall comply with Section 2603.

Reason Statement: This is a clarification of the general requirement for testing of vertical and lateral flame propagation of noncombustible exterior wall assemblies containing combustible components. Evaluation of vertical and lateral flame propagation in accordance with NFPA 285 is applicable to all combustible exterior wall assemblies where permitted for installation in or on exterior walls of Type I, II, III, IV construction. Current IBC Section 1402.5 only describes the case of water-resistive barriers with other combustible wall coverings and components addressed in other sections Chapter 14 and 26. This proposed code change also provides references to sections containing more specific information and applicable requirements regarding the application of NFPA 285 testing

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal does not change existing performance or construction requirements.

FS123-21

FS124-21

IBC:202 (New), 1402.7 (New)

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com)

2021 International Building Code

Add new definition as follows:

ENGINEERING ANALYSIS. A report from an approved source or an approved agency providing an analysis of alternative building elements, components, assemblies, designs, constructions, or other identified attributes and comparing them to existing data or prescriptive designs for compliance of the alternative with identified provisions prescribed by the code or other identified standard.

Add new text as follows:

1402.7 Vertical and lateral flame propagation compliance methods. When exterior wall assemblies are required in this Chapter to be tested for vertical and lateral flame propagation in accordance with, and comply with the acceptance criteria of NFPA 285, compliance with the requirements shall be established by any of the following:

1. An exterior wall assembly tested in accordance with and meeting the acceptance criteria of NFPA 285.
2. An exterior wall assembly design listed by an approved agency for compliance with NFPA 285.
3. An engineering analysis based on NFPA 285 test data as allowed by Section 104.11.

Reason Statement: The new proposal defines engineering analysis, a term that is widely used within the IBC. Terms used in the I-Codes include engineering evaluation, engineering assessment, engineering calculations, engineering judgement, engineering analysis, and rational analysis with “engineering analysis” used most often in the IBC. Engineering analyses are used to perform critical performance evaluation support the use of alternate materials and methods as allowed in Section 104.11.

The new section on compliance methods assists code enforcement by providing three compliance methods for those exterior wall assemblies that must be tested in accordance with NFPA 285. While the Code accepts the concept of approval-by-analysis under Section 104.11 this proposal provides specific guidance to credible sources of compliance information for required NFPA 285 testing

In the context of exterior wall assemblies of Type I – IV construction, analysis of deviations from an as-tested assembly are an acceptable means by which to support recognition of a modified assembly. All analysis or extension of results must be substantiated as being based on the fire exposure and acceptance criteria of NFPA 285. Upon submission of such documentation to the building official, the engineering analysis or engineering judgement can be approved as the basis for showing compliance with Section 2603.5.5 of the code.

Each compliance method is addressed below:

- NFPA 285 test data, from an accredited laboratory, for the exterior wall assembly confirms specific performance of a specific assembly.
- Designs listed by an accredited and approved agency will be based on successful NFP 285 testing of the exterior wall assembly and accompanying analysis of data.
- Analysis of deviations in construction or material(s) from a successful NFPA 285 test using principles of fire science and fire protection engineering is an appropriate means to support recognition of an assembly where such analysis considers influences that deviation(s) will have on the performance of the tested assembly and determines the deviations will not significantly alter the full-scale results.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The proposal clarifies methods available to designers, builders, and building officials that are acceptable to support verification and approval exterior wall assemblies regarding testing and compliance with the acceptance criteria of NFPA 285.

FS125-21

IBC: 1402.8 (New)

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com); Bob Zabcik, representing Metal Construction Association (MCA) (bob@ztech-consulting.com)

2021 International Building Code

Add new text as follows:

1402.8 Exterior wall veneers manufactured using combustible adhesives. Exterior wall assemblies 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 an exterior wall veneer manufactured using a combustible adhesive to laminate a metal core with noncombustible facing materials shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285, with the adhesive level at the maximum application rate intended for use. Combustibility shall be determined in accordance with Section 703.3.

Exception:

1. Walls in which the adhesive is the only combustible component and the adhesive complies with the following:
 - 1.1. A peak heat release rate of less than 150 kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg when tested, in accordance with ASTM E1354, with the adhesive applied to a noncombustible substrate at the maximum application rate intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m².
 - 1.2. 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.

Reason Statement: This proposed new section is specific to exterior wall veneers composed of a metal core and facings that are both noncombustible materials, and the facings are laminated to the core using a combustible laminating adhesive. IBC Section 703.3.1 on noncombustible materials does not address the condition of combustible adhesives used to adhere a noncombustible surfacing (i.e. facings) to a noncombustible base (i.e. a metal core). The language of Section 703.3.1 has, in practice, been interpreted such that the scope of the exception includes veneer materials / products with a noncombustible core and thin facings (noncombustible or having limited surface burning characteristics), even though a combustible adhesive present.

Interpreting Section 703.3.1 in such manner has resulted in determinations that the veneer materials described above are considered noncombustible and, therefore, exterior wall coverings using these materials are not required to be tested in accordance with, or comply with the acceptance criteria of, NFPA 285 even though the veneer may contain a combustible material (the adhesive) of unknown and unregulated flammability. The IBC does not currently contain provisions regulating the flammability of combustible adhesives when used in exterior wall applications. The proposed change establishes a flame propagation requirement for this type of exterior veneer when used in exterior wall covering applications.

The proposal contains an exception to required NFPA 285 testing for the condition where the combustible adhesive is the only combustible component in the exterior wall assembly and the adhesive complies with specific flammability limitations and surface burning characteristics. The flammability limitations and surface burning characteristics prescribed in the proposed exception are equivalent to those currently recognized for the condition where a combustible water resistive barrier is the only combustible component in an exterior wall assembly.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.



Figure 1. Metal honeycomb core (facing removed on lower half) – Combustible adhesives used to attach both top and bottom facings.



Figure 2. Corrugated metal core panel (End View) - Combustible adhesives used to attach both top and bottom facings.

Cost Impact: The code change proposal will increase the cost of construction

By expanding required compliance with NFPA 285, the proposal will increase testing for a segment of this exterior wall covering putting them at a level that is consistent with other exterior wall coverings specifically identified in the IBC including Metal Composite Materials (MCM), Exterior Insulation and Finish Systems (EIFS), High-Pressure Laminates (HPL), etc.

FS126-21

IBC: 1403.2

Proponents: Rob Brooks, Rob Brooks and Associates LLC, representing DuPont Performance Building Solutions (rob@rtbrooks.com)

2021 International Building Code

Revise as follows:

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 *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. ASTM E331 in accordance with Section 1402.2.
4. 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), and where joints occur, shall be lapped not less than 6 inches (152 mm).

Reason Statement: The purpose of this proposal is to coordinate IBC Section 1403.2 with IRC Section R703.2.

Two provisions from the water-resistive barrier Section R703.2 of the IRC are copied. The first provision is located in the charging language of 1403.2, which requires that the water-resistive barrier shall be continuous to the top of walls and terminated at penetrations. The second provision is located after the list of approved materials and requires that No. 15 felt and ASTM E2556 material installation use a horizontal orientation with specified lap lengths for the horizontal layers and vertical joints.

This proposal strengthens the IBC by ensuring the water-resistive barrier is continuous and will provide a means for draining water that enters the assembly to the exterior.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

These products are typically installed in accordance with the proposed amendments and will not increase the cost of construction.

FS126-21

FS127-21

IBC: 1403.2

Proponents: Jay H. Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

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 *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. ASTM E331 in accordance with Section 1402.2.
4. Other approved materials installed in accordance with the manufacturer's installation instructions.

Reason Statement: The purpose of this proposal is to coordinate IBC language with language in the IRC by adding a sentence that addresses installation and continuity of the WRB.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal clarifies and does not change requirements for or cost of WRB installation.

FS127-21

FS128-21

IBC: 1403.2

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

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*. *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.
- 4.3. ASTM E331 in accordance with Section 1402.2.
- 5.4. Other approved materials installed in accordance with the manufacturer's installation instructions.

Reason Statement: Foam sheathing has been used successfully for many years as an approved WRB system when qualified for this application and installed in accordance with manufacturer installation instructions. It is appropriate to recognize this WRB method in the code because it has consistently demonstrated at least equivalent performance of other materials prescriptively recognized in this list (e.g., No.15 felts, Grade D papers, and wraps per ASTM E2556). Section 1402.2 is referenced because those performance criteria have been historically applied as the water-resistance requirements of foam sheathing WRB systems -- tested in an exposed condition on full-scale wall assemblies for qualification purposes. Installation in accordance with manufacturer's instructions also is required because those instructions address the use of qualified components, such as joint treatments (e.g., tapes) and installation procedures consistent with tested performance.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal has no cost impact because it simply adds a WRB option to the code. The performance and installation requirements are consistent with current successful use.

FS128-21

FS129-21

IBC: 1403.8

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com)

2021 International Building Code

Revise as follows:

1403.8 Plastics. ~~Plastic panel, apron or spandrel walls as defined in this code shall not be limited in thickness, provided that such plastics and their assemblies conform to the requirements of Chapter 26 and are constructed of approved weather-resistant materials of adequate strength to resist the wind loads for cladding specified in Chapter 16.~~ Plastics intended for use in or on exterior walls shall comply with the applicable requirements of Chapter 14 and of Chapter 26.

Reason Statement: This proposal revises the language of 1403.8 in order to maintain confirmation of the general acceptance of plastics used in exterior wall assemblies under Section 1403 Materials, but provide more relevant references.

Plastic (and plastic panel), apron (and plastic apron), spandrel (and spandrel wall), and plastic spandrel (and plastic spandrel wall) are not defined terms within Chapter 2 of the IBC, therefore, the "...as defined..." language of Section 1403.8 is incorrect and creates confusion that distracts the User from the more relevant sections of the IBC. This section has caused confusion because the referenced products and applications ("Plastic panel, apron or spandrel walls ...") are more specifically addressed under other sections of the Code. Dating to the 2000 Edition of the IBC, this section has become outdated as more specific provisions have been added to Chapters 14, 16, 17 and 26 over the last 20+ years.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal does not change existing performance or construction requirements.

FS129-21

FS130-21

IBC: 1403.8

Proponents: Marcelo Hirschler, GBH International, representing self (mmh@gbhint.com)

2021 International Building Code

Delete without substitution:

~~**1403.8 Plastics.** Plastic panel, apron or spandrel walls as defined in this code shall not be limited in thickness, provided that such plastics and their assemblies conform to the requirements of Chapter 26 and are constructed of approved weather-resistant materials of adequate strength to resist the wind loads for cladding specified in Chapter 16.~~

Reason Statement: 1. This section is misleading because it gives the impression that it handles *all of the* plastic products used in exterior walls when, in reality it deals with a few isolated products with no major applicability and does not deal with the plastic products actually used in exterior walls.

2. Moreover, this section is not necessary to tell the user of the code that Chapter 16 deals with structural design and section 1609 deals with wind loads (see table of contents). It is also not necessary to point out that chapter 26 deals with plastics (it is already shown in the table of contents) and that sections 2606 through 2611 deal with various light transmitting plastics issues (also shown in the table of contents). Vague references to other chapters are not normally contained in the code. For example, there is no reference in Chapter 14 to Chapter 23 for wood products.

3. Finally, the information in this section about terms defined in the code is incorrect. This section states that the terms used in the section are "defined in this code", but that is incorrect, as shown below.

The term spandrel is not defined in the IBC (and neither is the term plastic spandrel wall or spandrel wall). In fact, the term spandrel is used in the following locations, and nowhere does that apply to plastic spandrels or to plastic materials used to the construction of exterior walls.

1. As one of the structural elements for primary structural frames, in the definition of "primary structural frame".
2. As part of the elements separating openings in 705.8.5 (Vertical separation of openings).
3. In 715.4, Exterior curtain wall/floor intersection, as something requiring fire resistance ratings.
4. In 715.5 Spandrel wall, describing fire resistance requirements.
5. In 2403.1 Identification of tempered spandrel glass
6. In 2406.3, dealing with tempered spandrel glass

The term plastic panel is also not defined in the IBC, but it clearly is associated with plastic light transmitting panels, which are covered in chapters 24 and 26. It is not used in any context other than light transmitting panels. This section does not point to chapter 24 and there is no need to point to chapter 26. The term plastic apron is not used anywhere in the IBC. The term apron is used in item 9 of 603.1.2, referring to windows, and in appendix F on rodentproofing. These sections are not relevant to plastic aprons on exterior walls.

Therefore, the section is unnecessary and misleading.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This simply eliminates a section that refers to products that do not exist.

FS130-21

FS131-21

IBC: 1403.12, 1403.12.1, 1403.12.2

Proponents: Matthew Dobson, VINYL SIDING INSTITUTE, representing Vinyl Siding Institute (mdobson@vinylsiding.org)

2021 International Building Code

Revise as follows:

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.

Delete without substitution:

~~**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).~~

Reason Statement: Currently polypropylene siding is the only cladding in both the IBC and IRC that requires a ASTM E84 test respective to specific Fire Separation Distance areas; 10 feet or closer to another building. Sections proposed for deletion do not provide any additional protection as the code already requires that if the product is used in these settings, it will need to be a part of an ASTM E119 fire rated assembly, typically a 1-hour rated assembly. In addition, as part of the ASTM product standard, D7254, the product is required to meet an E84 tested fire performance property (max flame spread of 200) that is consistent with other exterior, combustible building materials.

The current code language proposed for deletion is superfluous. The code has adequate provisions for regulating building materials used with Fire Separation Distance areas, for example as specified in Tables 601 and 705.5.

To help the committee understand the fire properties of polypropylene siding better, which has been questioned, VSI conducted a series of tests, at the Western Fire Center, that provide good fire safe characteristic insights by using ASTM E2707 *Standard Test Method for Determining Fire Penetration of Exterior Wall Assemblies Using a Direct Flame Impingement Exposure* and an exposed wall to this test.

Attached is a VSI Technical Report from these tests to help the committee better understand the fire characteristics of this product category.

The following is an overview of these tests:

- The product was tested in a setting and application that represents tight lot line settings (close Fire Separation Distance) by having a burner wall and exposed (receiver wall) facing each other – tests were spaced at 4' and 6' with gypsum backing to represent a rated assembly
- The product was also tested at a typical unprotected separation distance 10+' apart
- The product was tested with gypsum sheathing as on a protected wall assembly, and as part of an unprotected, combustible material wall assembly.

Based on the results of the test, it is worth noting the following:

- Polypropylene typically melts, spits, and falls off the wall and, in some cases, will collect and continue to burn on the ground within 18 inches of the burner wall
- At no point did any portion of the receiver wall with polypropylene siding combust, even at the 4' wall spacing
- The heat release rate of the polypropylene siding / gypsum sheathing (protected) base wall was about 65% less than the heat release rate of the polypropylene siding / fully combustible wood wall

-Heat release peaks occurred faster into the tests and at higher magnitudes for the polypropylene siding / wood combustible wall vs. the wall with polypropylene siding / gypsum assembly. Observation of the reaction of all the wall assemblies to the fire exposures during the tests clearly show and confirm that the respective fire resistive and fire separation distance sections within the building code provide the intended protection of exterior walls with polypropylene siding.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This change is removing requirements and won't necessarily impact cost since the ASTM standard requires this testing as well.

FS131-21

FS132-21

IBC: 1403.15 (New), 1403.15.1 (New), 1403.15.2 (New), 1403.15.3 (New), ASTM Chapter 35 (New)

Proponents: Marcelo Hirschler, representing self (mmh@gbhint.com)

2021 International Building Code

Add new text as follows:

1403.15 Ignition-resistant building materials. Where ignition-resistant building materials are used in the construction of exterior walls, they shall comply with Sections 1403.15.1 and 1403.15.2.

1403.15.1 Flame spread. Ignition-resistant building materials shall exhibit a flame spread index of 25 or less when tested on the front and back faces in accordance with the ASTM E84 or UL 723 test. Additionally, the ASTM E84 or UL 723 test shall be continued for a 20-minute period and the flame front shall not progress more than 10 ½ feet (3200 mm) beyond the centerline of the burners at any time during the test, on either the front or back faces. As an alternative to compliance with the ASTM E84 or UL 723 test, ignition-resistant building materials shall comply with the requirements of ASTM E2768 on both the front and back faces.

1403.15.2 Weathering. Ignition-resistant building materials shall maintain their performance in accordance with Section 1403.15.1 under conditions of use. Materials shall meet the performance requirements for weathering (including exposure to temperature, moisture and ultraviolet radiation) contained in ASTM D2898, in ASTM D6662, or in ASTM D7032, as applicable.

1403.15.3 Ignition-resistant building materials intended to be used as panel products. Where ignition-resistant building materials are intended to be used as panel products they shall comply with the requirements of Section 1403.15 when tested with a ripped or cut longitudinal gap of 1/8 inch (3.2 mm).

Add new standard(s) as follows:

ASTM

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

ASTM D6662: Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards (2017)

E2768: Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test) (2011 - reapproved 2018)

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM E2768 Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test) (2011 - reapproved 2018) , with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

ASTM D6662: Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards (2017) is already referenced in the IWUIC. This is simply a new occurrence of the reference in the I-Codes.

Reason Statement: The IWUIC contains requirements for ignition resistant building materials that are consistent with what is being proposed. Section 2303.2 of the code contains the same requirements for fire-retardant treated wood, which is an ignition-resistant building material. However, ignition-resistant building materials are not necessarily made of fire-retardant treated wood (or even of wood) and thus it would be inappropriate to look for them in chapter 23 and it is more appropriate for them to be in chapter 14 with all other materials potentially used in exterior walls that need to be regulated in terms of flame spread. In order for a material to be an ignition resistant material it needs to have a Class A flame spread index and also needs to comply with the additional flame front progress requirements, during the extended test. ASTM E2768 (already referenced in the IWUIC) is the equivalent of ASTM E84 (or UL 723) extended for 20 additional minutes, for a total of 30 minutes. The ASTM E2768 test is equivalent to the ASTM E84 or UL 723 test extended to 30 minutes and the requirements included here are the same as contained in the IWUIC. Similarly, the requirements for panels are as contained in the IBC chapter 23 for FRTW panels.

The weathering requirements are also consistent with those in the IWUIC.

Standards ASTM D6662 and ASTM E2768 were issued by a consensus standards organization (ASTM) and by committees D20 (on plastics, for ASTM D6662) and E05 on fire standards (for ASTM E2768). they are both already referenced in ICC codes and they are consistent with CP 28.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal simply adds an option for additional types of materials to be used in exterior walls.

FS133-21

IBC: SECTION 1403, 1403.15 (New), SECTION 1404, TABLE 1404.2, 1404.19 (New), 1404.19.1 (New)

Proponents: Michael Gardner, Representing National Gypsum Company, representing National Gypsum Company
(michael@mgardnerservices.com)

2021 International Building Code

SECTION 1403 MATERIALS.

Add new text as follows:

1403.15 Fiber-mat reinforced cementitious backer units. Fiber-mat reinforced cementitious backer units used as an exterior substrate for the application of exterior finish materials shall comply with ASTM C1325.

SECTION 1404 INSTALLATION OF WALL COVERINGS.

**TABLE 1404.2
MINIMUM THICKNESS OF WEATHER COVERINGS**

Portions of table not shown remain unchanged.

COVERING TYPE	MINIMUM THICKNESS (inches)
Fiber-mat reinforced cementitious backer units	<u>0.5</u>

Add new text as follows:

1404.19 Fiber-mat reinforced cementitious backer units. Fiber-mat reinforced cementitious backer units shall be permitted on exterior walls.

1404.19.1 Installation. Installation of fiber-mat reinforced cementitious backer units used as an exterior substrate for the application of exterior finish materials shall be in accordance with backer unit manufacturer's installation instructions. Panels shall be installed using corrosion-resistant fasteners. Finish materials shall be installed in accordance with approved finish material manufacturer's instructions.

Reason Statement: ASTM C1325 cement boards (technically, fiber-mat reinforced cementitious backer units) were first incorporated into the IBC in 2006 when they were added to Section 2509 as a substrate for interior wall tile in shower and tub areas. In the interim period, cement board has gained use as an exterior substrate, most often for architectural stone or direct-applied finish system applications. Exterior use of cement board is permitted by the C1325 standard and the two applicable Acceptance Criteria for cement board: AC 376, which addresses the cement board itself, and AC 59, which addresses direct-applied finish systems. But because the only IBC reference to the material is the interior use described in Chapter 25, confusion occurs regarding the ability to use cement board as an exterior substrate. This proposal is intended to clarify that cement board conforming with the ASTM C1325 standard can be used as a substrate in exterior applications by adding the existing reference contained in Chapter 25 to Chapter 14.

Note that, unlike Chapter 25, this proposal does not use the term "nonasbestos" when making reference to cement board. In 2018, the ASTM C17 committee voted to remove the term nonasbestos from the title of the C1325 standard. Removing the term corrected the erroneous perception that an asbestos-based cement backer unit existed in the marketplace. The first edition of the standard with the term nonasbestos removed from the title was issued with a 2018 date. The 2018 edition of the C1325 standard is referenced in Chapter 35.

Unfortunately, the listing of the C1325 standard in Chapter 35 is in error because it displays an outdated standard title that contains the term "nonasbestos". In addition, the related language in Chapter 25 was not updated to coincide with the change to the title of the standard. In submitting this proposal, it is requested that ICC staff address and correct the noted document title as errata. The proponent intends to submit a proposal to remove the term from Chapter 25 during the B group cycle.

To be clear, the scope of the ASTM C1325 standard clearly covers only cement backer units that do not contain asbestos. Materials manufactured to the C1325 standard do not contain asbestos.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The intent of the proposal is to clarify that the material in question can be used in an exterior application.

FS133-21

FS134-21

IBC: 202 (New), 1403.15 (New), ASTM Chapter 35 (New)

Proponents: Matthew Dobson, Vinyl Siding Institute, representing Vinyl Siding Institute (mdobson@vinylsiding.org)

2021 International Building Code

Add new definition as follows:

INSULATED VINYL SIDING. A continuous insulation cladding product, with manufacturer-installed foam plastic insulating material as an integral part of the cladding product, having a thermal resistance not less than R-2.

Add new text as follows:

1403.15 Insulated Vinyl Siding. Insulated vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D7793 by an approved agency.

Add new standard(s) as follows:

ASTM

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

ASTM D7793-20: Standard Specification for Insulated Vinyl Siding

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM D7793-20 Standard Specification for Insulated Vinyl Siding, with regard to some of the key ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before March 20, 2021.

Reason Statement: This product category has been in the market place for about 25 years. It was standardized almost 10 years ago. The product category has been recognized in both the IRC and IECC since 2015.

The IBC Fire Safety Committee and other fire safety experts asked that the product category be tested to the ASTM E84 test as an assembly (both vinyl and foam together) in order to be recognized in the IBC. That test (max flame-spread 200) has now been added to the standard, ASTM D7793-20.

The proposed definition is slightly different than the definition in the IRC. It is important to clearly identify this cladding as a form of continuous insulation as well, since it is tested for R-value, and must have an R-2 to qualify in the ASTM standard, and is in line with the energy code.

This product category offers both an affordable cladding and form of continuous insulation, adding an excellent sustainable energy efficient option for product specifiers.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The addition of this standard, simply offers another cladding option which in some cases could help to reduce the cost of construction.

FS134-21

FS135-21

IBC: 1404.3, 1404.3.3 (New)

Proponents: Theresa Weston, The Holt Weston Consultancy, LLC, representing The Holt Weston Consultancy, LLC (holtweston88@gmail.com)

2021 International Building Code

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3) , or an approved design using accepted engineering practice for hygrothermal analysis. Vapor retarders shall be installed in accordance with 1404.3.3 The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*.

Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.

Add new text as follows:

1404.3.3 Vapor Retarder Installation. Vapor retarders shall be installed in accordance with the manufacturer's instructions or an approved design. Where a vapor retarder also functions as an air barrier, the vapor retarder shall be installed as a continuous air barrier in accordance with the International Energy Conservation Code.

Reason Statement: In addition to protection from condensation, vapor retarders may be used as part of an air barrier assembly. This proposal seeks to coordinate the installation of vapor retarders between the IBC and IECC in order to streamline the compliance with both codes. Vapor retarders are commonly installed as or in conjunction with an air barrier. Air leakage control is currently dealt with in the I-codes based on energy efficiency considerations, but it is also critical to protection against moisture condensation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal will neither increase nor decrease the cost of construction, as its intention is to ensure that an existing requirement is installed in an effective manner that is coordinated with the use of these materials and assemblies in the IECC.

FS135-21

FS136-21

IBC: 1404.3, TABLE 1404.3(4)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3) , or an approved design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*. Where a Class I or II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class I or II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.

TABLE 1404.3(4)
CONTINUOUS INSULATION WITH CLASS I OR II VAPOR RETARDER

Portions of table not shown remain unchanged.

Reason Statement: In the prior code cycle, recognition of Class I and II "responsive" (smart) vapor retarders was added to the code (see Exception #4 in Section 1404.3). At that time, it was not possible to coordinate that change with the proposal which added guidance for use of a Class II vapor retarder (which also was required to be responsive, such as a Kraft paper facer on batt insulation) with exterior continuous insulation, particularly foam sheathing. A Class I responsive vapor retarder will provide improved performance over the currently recognized Class II responsive vapor retarder and should be permitted as addressed in this coordinating proposal.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal does not impact cost because it is adding an option. However, there may be cases where use of this option could reduce cost.

FS136-21

FS137-21

IBC: 202.2 (New), 1404.3, TABLE 1404.3(4)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Add new definition as follows:

RESPONSIVE VAPOR RETARDER. A vapor retarder material complying with a *vapor retarder class* of Class I or II, but which also has a vapor permeance of 1 perm or greater in accordance with ASTM E96, water method (Procedure B).

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3), or an approved design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*. Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall be a responsive vapor retarder ~~have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B)~~. Use of a Class I interior vapor retarder, that is not a responsive vapor retarder, in frame walls with a Class I vapor retarder, that is not a responsive vapor retarder, on the exterior side shall require an *approved* design.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. A responsive vapor retarder ~~Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B)~~ shall be allowed on the interior side of any frame wall in all climate zones.

TABLE 1404.3(4)
CONTINUOUS INSULATION WITH CLASS II RESPONSIVE VAPOR RETARDER

Portions of table not shown remain unchanged.

Reason Statement: This proposal adds a definition for responsive vapor retarders (also known as "smart" vapor retarders). The concept and application of responsive vapor retarders was appropriately added in the 2021 IBC last code cycle. However, in each use the properties had to be described because a definition did not exist. This proposal provides a consistent definition and applies it in relevant portions of the code for more efficient text and clarity.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal adds a definition to clarify and make the code text more efficient.

FS137-21

FS138-21

IBC: 202.2 (New), 1404.3, TABLE 1404.3(1), TABLE 1404.3(2), TABLE 1404.3(3), TABLE 1404.3(4), 1404.3.1, TABLE 1404.3(5) (New), 1404.3.2

Proponents: Rob Brooks, Rob Brooks and Associates LLC, representing DuPont Performance Building Solutions (rob@rtbrooks.com); Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Add new definition as follows:

RESPONSIVE VAPOR RETARDER. A vapor retarder material complying with a vapor retarder class of Class I or II, but which also has a vapor permeance of 1 perm or greater in accordance with ASTM E96, water method (Procedure B).

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and ~~1404.3(3)~~, or an *approved* design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*. ~~Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.~~

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. A vapor retarder shall not be required in Climate Zones 1, 2, and 3. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.
5. In Climate Zones 4 through 8, a vapor retarder on the interior side of frame walls shall not be required where the assembly complies with Table 1404.3(5).

TABLE 1404.3(1)
VAPOR RETARDER MATERIALS AND CLASSES

VAPOR RETARDER CLASS	ACCEPTABLE MATERIALS
I	Sheet polyethylene, nonperforated aluminum foil, or other approved materials with a perm rating of less than or equal to 0.1
II	Kraft-faced fiberglass batts or vapor retarder paint or other approved materials, applied in accordance with the manufacturer's instructions for a perm rating greater than 0.1 and less than or equal to 1.0
III	Latex paint, enamel paint, or other approved materials, applied in accordance with the manufacturer's instructions for a perm rating of greater than 1.0 and less than or equal to 10

Revise as follows:

**TABLE 1404.3(2)
VAPOR RETARDER OPTIONS**

CLIMATE ZONE	VAPOR RETARDER CLASS		
	I ^a	II ^a	III ^a
1, 2	Not permitted	Not Permitted	Permitted
3	Not permitted	Permitted ^c	Permitted
4 (except Marine)	Not permitted	Permitted ^c	See Table 1404.3(3)
Marine 4, 5, 6, 7, 8	Permitted ^{b,c}	Permitted ^c	See Table 1404.3(3)

- a. ~~See also Section 1404.3.2.~~ A responsive vapor retarder shall be allowed on the interior side of any frame wall in all climate zones.
- b. Use of a Class I interior vapor retarder, that is not a responsive vapor retarder, in frame walls with a Class I vapor retarder, that is not a responsive vapor retarder, on the exterior side shall require an approved design.
- c. Where a Class I or II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class I or II vapor retarder shall be a responsive vapor retarder.

**TABLE 1404.3(3)
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:^{a, b}
4	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum <i>Continuous insulation</i> with <i>R</i> -value \geq R2.5 over 2 x 4 wall <i>Continuous insulation</i> with <i>R</i> -value \geq R3.75 over 2 x 6 wall
5	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum <i>Continuous insulation</i> with <i>R</i> -value \geq R5 over 2 x 4 wall <i>Continuous insulation</i> with <i>R</i> -value \geq R7.5 over 2 x 6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum <i>Continuous insulation</i> with <i>R</i> -value \geq R7.5 over 2 x 4 wall <i>Continuous insulation</i> with <i>R</i> -value \geq R11.25 over 2 x 6 wall
7	<i>Continuous insulation</i> with <i>R</i> -value \geq R10 over 2 x 4 wall <i>Continuous insulation</i> with <i>R</i> -value \geq R15 over 2 x 6 wall
8	<i>Continuous insulation</i> with <i>R</i> -value \geq R12.5 over 2 x 4 wall <i>Continuous insulation</i> with <i>R</i> -value \geq R20 over 2 x 6 wall

- a. Vented cladding shall include vinyl lap siding, polypropylene, or horizontal aluminum siding, brick veneer with airspace as specified in this code, and other *approved* vented claddings.
- b. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class III vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the *International Energy Conservation Code*.

TABLE 1404.3(4)
CONTINUOUS INSULATION WITH A CLASS I OR II RESPONSIVE VAPOR RETARDER

CLIMATE ZONE	PERMITTED CONDITIONS ^a
3	<i>Continuous insulation with R-value ≥ R2</i>
4, 5, 6	<i>Continuous insulation with R-value ≥ R3 over 2 × 4 wall</i> <i>Continuous insulation with R-value ≥ R5 over 2 × 6 wall</i>
7	<i>Continuous insulation with R-value ≥ R5 over 2 × 4 wall</i> <i>Continuous insulation with R-value ≥ R7.5 over 2 × 6 wall</i>
8	<i>Continuous insulation with R-value ≥ R7.5 over 2 × 4 wall</i> <i>Continuous insulation with R-value ≥ R10 over 2 × 6 wall</i>

a. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class I or II *responsive vapor retarders*. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the *International Energy Conservation Code*. ~~In addition to the vapor retarder, spray foam with a maximum permeance of 1.5 perms at the installed thickness, applied to the interior cavity side of wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to comply with the continuous insulation requirement only for the moisture control purposes of this table where the spray foam R-value plus any continuous insulation R-value provided equals or exceeds the specified continuous insulation R-value.~~

1404.3.1 Spray foam plastic insulation for moisture control with Class II and III vapor retarders. For purposes of compliance with Table s 1404.3(3) and 1404.3(4), spray foam with a maximum permeance of 1.5 perms at the installed thickness applied to the interior ~~cavity~~ side of wood structural panels, fiberboard, *insulating sheathing* or gypsum shall be deemed to meet the *continuous insulation* moisture control requirement in accordance with one of the following conditions:

1. ~~where the~~The spray foam R-value meets or exceeds the specified continuous insulation R-value.
2. The combined R-value of the spray foam and *continuous insulation* is equal to or greater than the specified *continuous insulation* R-value.

Add new text as follows:

TABLE 1404.3(5)
CONTINUOUS INSULATION ON WALLS WITHOUT A CLASS I, II, or III INTERIOR VAPOR RETARDER^a

CLIMATE ZONE	PERMITTED CONDIITIONS ^{b,c}
4	<i>Continuous insulation with R-value \geq 4.5</i>
5	<i>Continuous insulation with R-value \geq 6.5</i>
6	<i>Continuous insulation with R-value \geq 8.5</i>
7	<i>Continuous insulation with R-value \geq 11.5</i>
8	<i>Continuous insulation with R-value \geq 14</i>

- a. The total insulating value of materials to the interior side of the exterior *continuous insulation*, including any cavity insulation, shall not exceed R-5. Where the R-value of materials to the interior side of the exterior *continuous insulation* exceeds R-5, an approved design shall be required.
- b. A water vapor control material layer having a permeance of not greater than 1 perm in accordance with ASTM E96, Procedure A (dry cup) shall be placed on the exterior side of the wall and to the interior side of the exterior *continuous insulation*. The exterior *continuous insulation* shall be permitted to serve as the vapor control layer where, at its installed thickness or with a facer on its interior face, the exterior *continuous insulation* is a Class I or II vapor retarder.
- c. The requirements of this table apply only to *continuous insulation* used to control moisture in order to allow walls without a Class I, II or III interior vapor retarder. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the *International Energy Conservation Code*.

Delete without substitution:

~~**1404.3.2 Hybrid insulation for moisture control with Class III vapor retarders.** For the purposes of compliance with Table 1404.3(3), the combined *R*-values of spray foam plastic insulation and continuous insulation shall be permitted to be counted toward the continuous *R*-value requirement.~~

Reason Statement: This proposal is an "omnibus" proposal that incorporates the sum effect of multiple individual proposals separately submitted by the Foam Sheathing Committee of the American Chemistry Council. This omnibus proposal provides a complete view of how all of the individual proposals are integrated (correlated) to avoid any confusion in how the various proposals may relate to the overall vapor retarder provisions. Thus, portions of Section 1404.3 are included even where changes are not made for a complete picture of the final provisions if all the individual proposals and/or this omnibus proposal is approved.

The individual proposals are segregated as follows:

Non-technical revisions to the 2024 IBC that correlate with the 2021 IRC:

- a. Proposal 6811 - Relocate text from 1404.3 into Table 1404.3(2) where it is properly assigned to various climate zones.

Technical revisions to the 2024 IBC that correlate with the 2021 IRC:

- a. Proposal 6782 - A proposal to not require a vapor retarder in Climate Zones 1, 2 and 3.
- b. Proposal 6791 - Combine 1404.3.1 and 1404.3.2 and relocate table footnote to clarify combined use of spray foam and continuous insulation.
- c. Proposal 6833 - Revise Table 1404.3(1) footnote to correlate with IRC.

Non-technical revisions that are new to the 2024 IBC that are not contained in the 2021 IRC:

- a. Proposal 6789 - Define responsive vapor retarder and insert/replace text where appropriate.

Technical revisions that are new to the 2024 IBC that are not contained in the 2021 IRC:

- a. Proposal 6784 - A new table and provisions for walls without a Class I, II or III interior vapor retarder
- b. Proposal 6790 - Allow a Class I responsive vapor retarder with foam sheathing

This omnibus proposal is needed to better coordinate the 2024 IBC provisions with the 2021 IRC provisions, address unintended correlation issues that occurred between various 2021 IBC approved proposals the last code cycle, and to make a few incremental improvements to the 2024 IBC vapor retarder provisions that will also be proposed for the upcoming Group B hearings for the 2024 IRC.

Cost Impact: The code change proposal will decrease the cost of construction

This overall proposal of multiple separate proposals has the net effect of decreasing cost. For most aspects, this proposal will not increase or decrease cost because it is simply adding options (as explained in the various individual proposals incorporated into this omnibus proposal). However, in a few cases, such as the addition of the exception to not require a vapor retarder in Climate Zones 1-3 can reduce cost.

FS138-21

FS139-21

IBC: 1404.3, TABLE 1404.3(2)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3), or an approved design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*. ~~Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.~~

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. ~~Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.~~

**TABLE 1404.3(2)
VAPOR RETARDER OPTIONS**

CLIMATE ZONE	VAPOR RETARDER CLASS		
	I ^a	II ^a	III ^a
1, 2	Not permitted	Not Permitted	Permitted
3	Not permitted	Permitted ^c	Permitted
4 (except Marine)	Not permitted	Permitted ^c	See Table 1404.3(3)
Marine 4, 5, 6, 7, 8	Permitted ^b	Permitted ^c	See Table 1404.3(3)

- a. See also Section 1404.3.2: Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.
- b. Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an *approved* design.
- c. Where a Class II vapor retarder is used in combination with foam plastic *insulating sheathing* installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B).

Reason Statement: This proposal moves text and an exception added last code cycle into footnotes for Table 1404.3(2), also added last code cycle. This makes the IBC formatting consistent with the IRC and is a matter of appropriately correlating individual proposals from the last code development cycle. It also properly associates the moved provisions with specific application conditions in Table 1404.3(2) as intended. This proposal also makes it clearer that the general Exceptions listed in Section 1404.3 do not apply to these specific requirements but to the overall general charging language in the first paragraph of Section 1404.3. This also is consistent with the IRC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal addresses a correlation matter and code formatting clarification without changing technical requirements. Therefore, there is no cost impact.

FS140-21

IBC: 1404.3

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3) , or an approved design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*. Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.
5. A vapor retarder shall not be required in Climate Zones 1, 2, and 3.

Reason Statement: This proposal correlates the IBC vapor retarder provisions with current IRC provisions by including an exception added to the IRC in the 2019 Group B hearing cycle. Similar changes to the vapor retarder provisions of the IBC had already been approved in the 2018 Group A hearing cycle, so it was not possible to correlate proposals on this matter (as intended) at that time. The exception is appropriate for walls constructed in accordance with the IRC and IBC.

Cost Impact: The code change proposal will decrease the cost of construction

The proposal removes the requirement to include an additional material or "control layer" in wall assemblies in Climate Zones 1-3. Thus, where the exception is applicable and used, it can lower the cost of construction.

FS140-21

FS141-21

IBC: 1404.3, TABLE 1404.3(5) (New)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council
(jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Tables 1404.3(2) and 1404.3(3) , or an approved design using accepted engineering practice for hygrothermal analysis. The appropriate climate zone shall be selected in accordance with Chapter 3 of the *International Energy Conservation Code*. Where a Class II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class II vapor retarder shall have a vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B). Use of a Class I interior vapor retarder in frame walls with a Class I vapor retarder on the exterior side shall require an approved design.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. Class I and II vapor retarders with vapor permeance greater than 1 perm when measured by ASTM E96 water method (Procedure B) shall be allowed on the interior side of any frame wall in all climate zones.
5. In Climate Zones 4 through 8, a vapor retarder on the interior side of frame walls shall not be required where the assembly complies with Table 1404.3(5).

Add new text as follows:

TABLE 1404.3(5)
CONTINUOUS INSULATION ON WALLS WITHOUT A CLASS I, II, or III INTERIOR VAPOR RETARDER^a

CLIMATE ZONE	PERMITTED CONDITIONS ^{b,c}
4	Continuous insulation with R-value \geq 4.5
5	Continuous insulation with R-value \geq 6.5
6	Continuous insulation with R-value \geq 8.5
7	Continuous insulation with R-value \geq 11.5
8	Continuous insulation with R-value \geq 14

- a. The total insulating value of materials to the interior side of the exterior continuous insulation, including any cavity insulation, shall not exceed R-5. Where the R-value of materials to the interior side of the exterior continuous insulation exceeds R-5, an *approved* design shall be required.
- b. A water vapor control material layer having a permeance of not greater than 1 perm in accordance with ASTM E96, Procedure A (dry cup) shall be placed on the exterior side of the wall and to the interior side of the exterior continuous insulation. The exterior continuous insulation shall be permitted to serve as the vapor control layer where, at its installed thickness or with a facer on its interior face, the exterior continuous insulation is a Class I or II vapor retarder.
- c. The requirements of this table apply only to continuous insulation used to control moisture in order to allow walls without a Class I, II, or III interior vapor retarder. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the *International Energy Conservation Code*.

Reason Statement: This proposal is needed to coordinate with the IECC R-value options for wood-frame and cold-formed steel-frame walls to achieve compliance using exterior continuous insulation only without cavity insulation. This approach is consistent with the long-standing successful use of "insulation entirely above the roof deck" for low-slope roof systems (the same principle applies to walls). Consequently, this wall insulation option needs to be supported with a coordinated approach in the building code's water vapor control provisions to ensure performance at least equivalent to other wall assembly conditions addressed in Section 1404.3 (e.g., Tables 1404.3(3) and 1404.3(4)). It is well known that placing the majority of insulation continuously on the exterior side of an assembly can provide a high degree of thermal and moisture control and protection of the structure. It also does not require an interior vapor retarder and, therefore, maximizes inward drying potential. For these reasons and others, it is commonly known as the "perfect wall". It is a practice currently and successfully used, yet it needs building code requirements to ensure appropriate use, compliance and enforcement.

As with any practice, there are limitations and requirements to prevent unintended misapplication. These are addressed in footnotes to the table in a manner consistent with other tables in Section 1404.3. The overall requirements of this proposal are based on an extensive review of water vapor control codes, standards, research data, field data, and practices (refer to ABTG, 2015 and ASTM, 2017 in the bibliography). This same research was used to justify major improvements to the vapor retarder provisions for the 2021 editions of the IBC and IRC during the 2018 and 2019 code development cycles. However, this "perfect wall" option was not addressed at that time.

Bibliography: ABTG (2015). Assessment of Water Vapor Control Methods for Modern Insulated Light-Frame Wall Assemblies, ABTG Research Report No. 1410-03, <http://www.appliedbuildingtech.com/rr/1410-03>
 Grandell, J.H., "Assessment of Hygrothermal Performance and Design Guidance for Modern Light-Frame Wall Assemblies," Advances in Hygrothermal Performance of Building Envelopes: Materials, Systems and Simulations, ASTM STP1599, P. Mukhopadhyaya and D. Fisler, Eds., ASTM International, West Conshohocken, PA, 2017, pp. 362-394, <http://dx.doi.org/10.1520/STP159920160097>

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal adds an option for vapor control, not a requirement. Thus, it does not impact cost of construction and, in some cases, may provide a solution that is more cost-effective for a particular building wall application.

FS142-21

IBC: TABLE 1404.3(4), 1404.3.1, 1404.3.2

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council
(jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

**TABLE 1404.3(4)
CONTINUOUS INSULATION WITH CLASS II VAPOR RETARDER**

Portions of table not shown remain unchanged.

CLIMATE ZONE	PERMITTED CONDITIONS ^a
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a. In addition to the vapor retarder, spray foam with a maximum permeance of 1.5 perms at the installed thickness, applied to the interior cavity side of wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to comply with the continuous insulation requirement only for the moisture control purposes of this table where the spray foam *R*-value plus any continuous insulation *R*-value provided equals or exceeds the specified continuous insulation *R*-value.

1404.3.1 Spray foam plastic insulation for moisture control with Class II and III vapor retarders. For purposes of compliance with ~~Table Tables~~ 1404.3(3) and 1404.3(4), spray foam with a maximum permeance of 1.5 perms at the installed thickness applied to the interior cavity side of wood structural panels, fiberboard, *insulating sheathing* or gypsum shall be deemed to meet the continuous insulation moisture control requirement ~~where the~~ in accordance with one of the following conditions:

1. The spray foam R-value meets or exceeds the specified continuous insulation R-value.
2. The combined R-value of the spray foam and continuous insulation is equal to or greater than the specified continuous insulation R-value.

Delete without substitution:

~~**1404.3.2 Hybrid insulation for moisture control with Class III vapor retarders.** For the purposes of compliance with Table 1404.3(3), the combined *R*-values of spray foam plastic insulation and continuous insulation shall be permitted to be counted toward the continuous *R*-value requirement.~~

Reason Statement: This proposal aligns provisions for spray foam in the IBC with those in the IRC and, in doing so, applies the maximum 1.5 perm limit to both applications of spray foam (currently it is not consistently applied to Sections 1404.3.1 and 1404.3.2 which was the result of an inadvertent proposal correlation issue from the previous code development cycle). By moving the content of Section 1404.3.2 into Item #2 of 1404.3.1 it also simplifies and clarifies the IBC in following the format of the IRC. Also, this proposal ensures that these provision apply to both Class II and Class III vapor retarder tables which is consistent with the IRC and was intended for the IBC (but also not possible due to inability to correlate separate proposals last code cycle). Finally, the proposal deletes an "orphaned" footnote in Table 1404.3(4) that was intended to be deleted and replaced by the code text in Section 1404.3.1 as proposed here. In effect, this is a "clean-up" proposal for changes made in the last code cycle.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal does not change the requirements or intent of the code and has no cost impact. However, in making the clarification and coordination with the IRC, it does extend the application of these spray foam provisions for use with Class II vapor retarder and continuous insulation which, in some cases, can reduce cost or provide more options for code compliance.

FS142-21

FS143-21

IBC: TABLE 1404.3(4)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council
(jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

**TABLE 1404.3(4)
CONTINUOUS INSULATION WITH CLASS II VAPOR RETARDER**

CLIMATE ZONE	PERMITTED CONDITIONS ^a
3	Continuous insulation with R -value $\geq R2$
4, 5, 6	Continuous insulation with R -value $\geq R3$ over 2×4 wall Continuous insulation with R -value $\geq R5$ over 2×6 wall
7	Continuous insulation with R -value $\geq R5$ over 2×4 wall Continuous insulation with R -value $\geq R7.5$ over 2×6 wall
8	Continuous insulation with R -value $\geq R7.5$ over 2×4 wall Continuous insulation with R -value $\geq R10$ over 2×6 wall

a. ~~The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class II vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the *International Energy Conservation Code*. In addition to the vapor retarder, spray foam with a maximum permeance of 1.5 perms at the installed thickness, applied to the interior cavity side of wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to comply with the continuous insulation requirement only for the moisture control purposes of this table where the spray foam R -value plus any continuous insulation R -value provided equals or exceeds the specified continuous insulation R -value.~~

Reason Statement: This proposal addresses a correlation problem between two proposals from the 2018 code development cycle. This table and the existing footnote was added by proposal FS120-18, but the same footnote in existing Table 1404.3(3) was moved to text in Section 1404.3.1 by a different proposal. This proposal is doing the same thing for Table 1404.3(4) to remove a footnote that is redundant with the text in 1404.3.1. As another correlation fix, this proposal is also replacing the deleted footnote with a footnote that was added to Table 1404.3(3) last code cycle and which also should apply to Table 1404.3(4). These changes make Table 1404.3(4) consistent with the IRC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal addresses a code correlation issue and does not change requirements. It has no cost impact.

FS143-21

FS144-21

IBC: 202 (New), TABLE 1404.3(3)

Proponents: Theresa Weston, representing The Holt Weston Consultancy, LLC (holtweston88@gmail.com)

2021 International Building Code

Add new definition as follows:

RAINSCREEN. An assembly applied to an exterior wall which consists of, at minimum, an outer layer, an inner layer, and a cavity between them sufficient for the passive removal of liquid water and water vapor.

Revise as follows:

**TABLE 1404.3(3)
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR: ^{a, b}
4	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with R -value $\geq R2.5$ over 2 x 4 wall Continuous insulation with R -value $\geq R3.75$ over 2 x 6 wall
5	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with R -value $\geq R5$ over 2 x 4 wall Continuous insulation with R -value $\geq R7.5$ over 2 x 6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with R -value $\geq R7.5$ over 2 x 4 wall Continuous insulation with R -value $\geq R11.25$ over 2 x 6 wall
7	Continuous insulation with R -value $\geq R10$ over 2 x 4 wall Continuous insulation with R -value $\geq R15$ over 2 x 6 wall
8	Continuous insulation with R -value $\geq R12.5$ over 2 x 4 wall Continuous insulation with R -value $\geq R20$ over 2 x 6 wall

- a. Vented cladding shall include vinyl lap siding, polypropylene, or horizontal aluminum siding, brick veneer with airspace as specified in this code, rainscreens, and other approved vented claddings.
- b. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class III vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the thermal envelope requirements of the International Energy Conservation Code.

Reason Statement: Rainscreens are a common and growing construction technique that is not material specific. The concept of cladding and substrate layers separated by a cavity that allows water to drain and air flow to accelerate drying is the most basic understanding of how a rainscreen system works. This proposal seeks to define the term *rainscreen* and to add to include *rainscreens* to the list of vented claddings that work in a system with Class III Vapor Retarder assemblies.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This does not add a new requirement but clarifies existing requirements and already existing option and so will not either increase or decrease the cost of construction.

FS145-21

IBC: 1404.4, 1404.4.1 (New)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council (jcrandell@aresconsulting.biz)

2021 International Building Code

Revise as follows:

1404.4 Flashing. Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect that moisture to the surface of the exterior wall finish or to a *water-resistive barrier* complying with Section 1403.2 and that is part of a means of drainage complying with Section 1402.2. Flashing shall be installed at the perimeters of exterior door and window assemblies in accordance with Section 1404.4.1, penetrations and terminations of *exterior wall* assemblies, *exterior wall* intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim. Where self-adhered membranes are used as flashings of *fenestration* in wall assemblies, those self-adhered flashings shall comply with AAMA 711. Where fluid applied membranes are used as flashing for *exterior wall* openings, those fluid applied membrane flashings shall comply with AAMA 714.

Add new text as follows:

1404.4.1 Fenestration flashing. Flashing of the fenestration to the wall assembly shall comply with the fenestration manufacturer's instructions or, for conditions not addressed by the fenestration manufacturer's instructions, shall comply with one of the following:

1. The *water-resistive barrier* manufacturer's flashing instructions;
2. The flashing manufacturer's flashing instructions;
3. A flashing design or method of a registered design professional; or,
4. Other *approved methods*.

Reason Statement: This proposal clarifies the role of fenestration manufacturer instructions in accordance with Section 1404.13.1 with regard to flashing. The proposed new section provides a list of approved sources for flashing instructions where a flashing condition is not addressed in the fenestration manufacturer's flashing instructions. These instructions are separate from the structural installation requirements related to anchorage and support in IBC Section 1709.5, which will be addressed in the 2022 Group B code development cycle under the IBC Structural Committee. Flashing instructions are necessary because the window product standard, NAFS or A440, addresses only water resistance of the fenestration unit itself, not the installation and performance of flashing at the fenestration to wall interface. Flashing of window and door penetrations involves multiple products including the window or door product, the flashing materials, and WRB materials used on a wall assembly. Each of these product manufacturers have a vested interest to ensure that their products are properly integrated with other wall components to ensure continuity of water resistance of the whole wall assembly. Therefore, each of these manufacturer's should be provided with an appropriate role or responsibility for achieving this goal.

More than one source for flashing instruction is often needed. Where fenestration manufacturers include instructions for flashing, they are often and necessarily limited in scope and unable to address every possible wall assembly condition. Therefore, this proposal is needed to ensure that WRB manufacturers, flashing manufacturers, designers, and others are provided with a mechanism to communicate their flashing instructions for interfacing walls with windows and doors.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is a clarification of current accepted practice and is consistent with similar concepts in the IRC.

FS145-21

FS146-21

IBC: 1407.5 (New)

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com); William Egan, representing EIFS Industry Members Association (EIMA) (bill@billegangroup.com)

2021 International Building Code

Add new text as follows:

1407.5 Exterior walls of buildings of any height. Exterior wall assemblies containing an EIFS exterior wall covering shall be tested in accordance with, and comply with the acceptance criteria of, NFPA 285 and comply with Section 2603.5.

Reason Statement: This code proposal clarifies the fire testing requirements for EIFS systems and add a reference to Section 2603.5 to ensure the exterior wall assemblies with EIFS exterior wall coverings will comply with the relevant requirements for fire resistance (E119/UL 263), surface burning characteristics (E84/UL 723), vertical and lateral flame propagation (NFPA 285), and ignition resistance (NFPA 268). The current Section 1407.1 references, "...in addition to other applicable requirements of [...] Chapter 26.," the new proposed Section 1407.5 provides clear and specific reference to the codified fire testing and fire performance requirements for exterior wall assemblies containing foam plastic insulation and associated exterior coatings and facings.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
The proposal does not change existing performance or construction requirements.

FS146-21

FS147-21

IBC: 1407.7 (New)

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com); William F Egan, Bill Egan Group LLC, representing EIFS Industry Members Association (EIMA) (bill@billegangroup.com)

2021 International Building Code

Add new text as follows:

1407.7 Fire-resistance. Where EIFS are used on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: EIFS which are part of an exterior wall assembly not containing foam plastic insulation and are installed on the outer surface of a fire-resistance-rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly, shall not be required to comply with this section.

Reason Statement: The proposal adds a new subsection to Section 1407, EIFS (Exterior Insulation and Finish Systems), consistent with Sections 1406 (on MCM systems) and 1408 (on HPL systems), that requires evidence is provided to support that a fire resistance rating, when required by Section 705, is not reduced. The proposal adds this same language to Section 1407 on EIFS.

Section 1407.2 requires that "EIFS shall be constructed such that it meets the performance characteristics required in ASTM E2568." The ASTM specification contains a requirement equivalent to what is proposed, but adding this proposed language to the IBC makes it easier for the code official to note that the same requirement to verify fire-resistance applies to EIFS as it does to the other assemblies.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal does not change existing performance or construction requirements.

FS147-21

FS148-21

IBC: SECTION 1409, 1409.1

Proponents: Michael O'Brian, Chair, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Delete without substitution:

~~**SECTION 1409 PLASTIC COMPOSITE DECKING.**~~

Revise as follows:

~~1409.1~~ **1405.2 Plastic composite decking.** Exterior deck boards, *stair* treads, *handrails* and *guards* constructed of plastic composites, including but not limited to plastic lumber, shall comply with Section 2612.

Reason Statement: This code proposal simply moves plastic composite decking from its current Section 1409 to a new subsection under Section 1405 Combustible Materials on the Exterior Side of Exterior Walls.

Plastic composite decking is best placed under Section 1405 because these products (deck boards, stair treads, handrails and guards and plastic lumber) contain plastic composite materials, which are combustible. These products are installed on the exterior side of exterior walls, but are not exterior wall coverings. Furthermore, the current location for plastic composite decking in Section 1409 is easily missed, as it is the last section in Chapter 14.

The provisions for plastic composite decking have not been changed and the pointer to Section 2612 for additional requirements remains. A pointer to the requirements contained in chapter 26 (section 2612) is needed because chapter 26 deals primarily with the materials while Chapter 14 deals more specifically with the actual products for which the materials are used.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This is simply the relocation of the provisions to a more appropriate location so the requirements are not overlooked.

FS148-21

FS149-21 Part I

IBC: (New), SECTION 1409 (New), 1409.1 (New), 1409.2 (New), 1409.2.1. (New), 1409.2.2. (New), 1409.2.3 (New), 1409.3. (New), 1409.4. (New), 1409.5 (New), 1409.5.1. (New), 1409.5.2. (New), 1409.6. (New), 1409.7. (New), 1409.7.1. (New), 1409.7.1.1. (New), 1409.7.2. (New), 1409.7.2.1. (New), 1409.7.2.2 (New), 1409.7.3 (New), 1409.7.3.1. (New), 1409.7.3.2. (New), 1409.7.3.3. (New), 1409.7.3.4. (New), 1409.8. (New), 1409.9. (New), 1409.9.1. (New)

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com); Bob Zabcik, Metal Construction Association (MCA), representing Metal Construction Association (MCA) (bob@ztech-consulting.com)

2021 International Building Code

Add new definition as follows:

INSULATED METAL PANEL (IMP). A factory manufactured panel consisting of metal facings and an insulation core intended for use as a system forming an exterior wall, an exterior wall covering, a roof covering, or of a building.

Add new text as follows:

SECTION 1409 INSULATED METAL PANEL (IMP).

1409.1 General. The provisions of this section shall govern the materials, construction, and quality of insulated metal panels (IMP) for use as exterior walls and exterior wall coverings in addition to other applicable requirements of Chapters 14 and 16.

1409.2 Structural design. Structural design of IMP systems shall be in accordance with this section.

1409.2.1. IMP systems used as exterior walls. IMP systems used as exterior wall shall be designed and constructed to resist design loads in accordance with applicable provisions of Chapter 16.

1409.2.2. IMP systems used as exterior wall coverings. IMP systems used as exterior wall covering systems shall be designed and constructed to resist wind loads as required by Section 1609.

1409.2.3 Approval. Results of approved tests or engineering analysis shall be submitted to the building official to verify compliance with the applicable requirements of Chapter 16.

1409.3. Weather resistance. IMP systems shall comply with Section 1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.

1409.4. Durability. IMP systems shall be constructed of approved materials that maintain the performance characteristics required in section 1402 for the duration of use.

1409.5 Fire-resistance rating. Evidence of the required fire resistance rating of IMPs systems shall be in accordance with this section.

1409.5.1. IMP used as exterior walls. In all types of construction where IMP systems are used as exterior walls required to have a fire resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the wall achieves the required fire-resistance rating.

1409.5.2. IMP used as exterior wall coverings. IMP used as exterior wall coverings. In all types of construction where IMP systems are used as exterior wall coverings on exterior walls required to have a fire resistance rating in accordance with section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: IMP systems not containing combustible insulation, which are installed on the outer surface of a fire-resistance rated exterior wall in a manner such that the attachments do not penetrate to the entire exterior wall assembly, shall not be required to comply with this section.

1409.6. IMP with noncombustible core insulation. IMP with noncombustible core insulation shall comply with Sections 1409.1 through 1409.5. Combustibility shall be determined in accordance with Section 703.3.

1409.7. IMP Systems with combustible core insulation. IMP systems with combustible core insulation shall comply with Sections 1409.1 through 1409.5 and this section. Combustibility shall be determined in accordance with Section 703.3.

1409.7.1. Surface-burning characteristics. Unless otherwise specified in this section, the combustible core shall have a flame spread index of 75 or less and a smoke developed index of 450 or less when tested in the maximum thickness intended for use, but not to exceed 4 inches (102 mm), in accordance with ASTM E84 or UL 723. For thickness greater than 4 inches (102 mm) the combustible core shall have a flame spread index of 75 or less and a smoke developed index of 450 or less at 4 inches (102 mm) thickness and the IMP approved based on testing in accordance with 1409.7.2.2 at the maximum IMP thickness intended for use.

1409.7.1.1. Foam plastic core. For IMP having a core insulation composed of foam plastic, the insulation core shall comply with Section 2603.3.

1409.7.2. Thermal Barrier. Unless otherwise specified in this section, IMP with combustible core shall be separated from the interior of a building by an approved thermal barrier consisting of 1/2 -inch (12.7 mm) gypsum wallboard 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.

1409.7.2.1. Foam plastic core. For IMP having a foam plastic core, use with the thermal barrier prescribed in Section 1409.7.2 shall be in accordance with Section 2603.4 unless special approval is obtained on the basis of Section 2603.9.

1409.7.2.2 Special approval. The thermal barrier specified Section 1409.7.2 is not required where IMP is specifically approved based on tests conducted in accordance with, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.1.1.1), FM 4880 or UL 1715. Such testing shall be performed with the IMP in a configuration related to the actual end-use and at the maximum thickness intended for use, and shall include seams, factory joints and other typical details used sealants intended for use.

1409.7.3 Type I, II, III, and IV construction. Where used as exterior walls or as exterior wall coverings on buildings of Type I, II, III, and IV construction, IMP systems shall comply with this section as follows:

1. IMP having a foam plastic core shall comply with Section 2603.5.
2. IMP having combustible core other than foam plastic shall comply with Sections 1409.7.3.1 through 1409.7.3.4.

1409.7.3.1. Surface-burning characteristics. The combustible core shall have a flame spread index of 25 or less and a smoke developed index of 450 or less when tested in the maximum thickness intended for use, but not to exceed 4 inches (102 mm), in accordance with ASTM E84 or UL 723. For thickness greater than 4 inches (102 mm) the combustible core shall have a flame spread index of 75 or less and a smoke developed index of 450 or less at 4 inches (102 mm) thickness and the IMP approved based on testing in accordance with 1409.7.2.2 at the maximum IMP thickness intended for use.

1409.7.3.2. Thermal barrier. IMP shall be separated from the interior of a building by an approved thermal barrier in accordance with Section 1409.7.2.

1409.7.3.3. Vertical and lateral flame propagation. IMP installations greater than 40 feet (12,192 mm) in height above grade plane shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. Such testing shall be performed on the exterior wall assembly and with the IMP in the maximum thickness intended for use.

1409.7.3.4. Ignition. IMP installations 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 1409.7.2.
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 1404.16 and Section 1404.16.1 or 1404.16.2.

1409.8. Type V construction. IMP shall be permitted for use in Type V construction.

1409.9. Labeling. Unless otherwise specified, the edge or face of each IMP or package shall bear the label of an approved agency. The label shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the product or materials' performance characteristics and approved agency's identification.

1409.9.1. Foam plastic core. IMP having a foam plastic core shall be labeled in accordance with Section 2603.2 and 2603.5.6, as applicable.

FS149-21 Part II

IBC: 2603.4.1.4

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com); Bob Zabcik, Metal Construction Association (MCA), representing Metal Construction Association (MCA) (bob@ztech-consulting.com)

2021 International Building Code

Revise as follows:

2603.4.1.4 Exterior walls, one-story buildings. ~~For one-story buildings, foam plastic having a flame spread index of 25 or less, and a smoke-developed index of not more than 450, shall be permitted without thermal barriers in or on exterior walls in a thickness not more than 4 inches (102 mm) where the foam plastic is covered by a thickness of not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a base metal thickness of 0.0160 inch (0.41 mm) and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.~~

For exterior walls of one-story buildings constructed of insulated metal panels (IMP) with foam plastic insulation cores, the thermal barrier is not required when all of the following apply:

1. The foam plastic insulation thickness is not more than 4 inches (102 mm).
2. The foam plastic insulation core has a flame spread index of 25 or less and a smoke developed index of 450 or less.
3. The foam plastic insulation is covered by a thickness of not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a base metal thickness of 0.0160 inch (0.41 mm).
4. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Reason Statement: The new proposal introduces a new definition of insulated metal panel (IMPs) products specifically designed and used for exterior wall and exterior wall covering applications of the building assembly.

Insulated Metal Panel (IMP) systems are construction materials comprised of factory-manufactured panels composed of an insulation core with metal facers. The insulation core of IMP panels is either combustible (e.g. foam plastic) or noncombustible (e.g. mineral wool) where the metal facers are most typically, but not limited to, steel. Applications of IMP include exterior walls, exterior wall coverings, roof assemblies, and roof coverings. The proposed new section focuses on exterior wall and exterior wall covering applications. It is important to note that IMP systems are very different from metal composite metal (MCM) exterior wall covering systems and have distinctly different performance requirements.

This proposal creates a new and separate section under Chapter 14 to ensure differentiation from MCM systems and to collect the relevant requirements and appropriate references for applications of IMP related to exterior walls and exterior wall coverings. The establishment of a section within Chapter 14 devoted to IMPs will simplify the identification and interpretation of code requirements for designers and manufacturers, and to assist building officials with compliance enforcement. The proposed new section does not change any of the current IBC requirements that are typically applied to IMPs. It simply collects them into a single section.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal does not change existing performance or construction requirements.

FS149-21 Part II

FS150-21

IBC: SECTION 1410 (New), 1410.1 (New)

Proponents: Michael O'Brian, representing FCAC (fcac@iccsafe.org)

2021 International Building Code

Add new text as follows:

SECTION 1410 BIPV SYSTEMS FOR EXTERIOR WALL COVERINGS AND FENESTRATION.

1410.1 Listing required. In addition to complying with other provisions of this code, BIPV systems used as exterior wall coverings or fenestration shall be listed and labeled in accordance with UL 1703 or both UL 61730-1 and UL 61730-2.

Reason Statement: Building Integrated Photovoltaic (BIPV) Systems are increasingly becoming popular due to efforts to achieve Net Zero Energy. Requirements for BIPV Systems used as roof assemblies and roof coverings are already addressed in Chapter 15. New applications for BIPV systems are systems that are used as either exterior wall coverings or fenestration. The IBC is silent on the requirements for such systems. Chapter 14 contains a variety of requirements for exterior wall coverings and exterior wall assemblies. Clearly, if BIPV systems are included in exterior walls they should comply with all such requirements (including fire tests and weather protection). In addition to those requirements, this proposal requires that BIPV systems be listed and labeled in accordance with the applicable UL standards. Note these UL standards are already addressed in the IBC.

This proposal is submitted by the ICC Fire Code Action Committee (FCAC). The FCAC was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes with regard to fire and life safety in new and existing buildings and facilities as well as the protection of life and property in wildland urban interface areas. In 2020 and 2021 the Fire-CAC held multiple virtual meetings that were open to any interested party. In addition, there were numerous virtual specific working group meetings that were also open to any interested parties, to develop, discuss and debate the proposed changes. Related documentation and reports are posted on the FCAC website at: <https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/fire-code-action-committee-fcac/>

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This code change proposal will not increase or decrease the cost of construction. This proposal clarifies what requirements apply to BIPV systems used as an exterior wall covering or fenestration.

FS150-21

FS151-21

IBC: (New), SECTION 1410 (New), 1410.1 (New), 1410.2 (New), 1410.3 (New), 1410.3.1 (New), 1410.3.1.1 (New), 1410.4 (New)

Proponents: Laverne Dalgleish, representing Rainscreen Association in North America (ldalgleish@rainscreenassociation.org)

2021 International Building Code

Add new definition as follows:

RAINSCREEN. Assembly applied to an exterior wall which consists of, at minimum, an outer layer, an inner layer, and a cavity between them sufficient for the passive removal of liquid water and water vapor.

Add new text as follows:

SECTION 1410 RAINSCREEN.

1410.1 General. The provisions of this section shall govern the materials and construction of rainscreens for use as exterior wall coverings in addition to other sections of this code.

1410.2 Structural design. The cladding, underlying structural framing and substrate that combine to create a rainscreen shall be designed and constructed to resist loads as required by Chapter 16.

1410.3 Water resistance. Rainscreens shall comply with Section 1402.

1410.3.1 Rainscreen drainage. The rainscreen drainage cavity shall be designed to drain water from within the drainage cavity to the exterior of the building.

1410.3.1.1 Water-resist ive barrier. Rainscreens shall include a water resistive barrier that complies with Section 1403.2.

1410.4 Installation. Each component of the rainscreen assembly shall be installed in general accordance with the manufacturer's instructions.

Reason Statement: Rainscreen involves a broad spectrum of material components. Identifying each component in a respective material chapter (i.e. concrete, plastic, wood, steel, etc.) would lead to a scattered approach that would make the reader search the code for a complete answer. Creating a single section addressing rainscreen that includes performance requirements is appropriate and allows for the development of additional performance testing in the future.

The natural location for this Section is Chapter 14 that deals with Exterior Walls.

The proposed section mirrors other wall system sections that are currently included in the IBC (masonry, EIFS, etc.) and provides some minimum requirements and a format for further criteria as they are developed for the acceptable performance of rainscreens.

For the definition -The use of rainscreen in construction is now common and involves many different types of materials from concrete and brick to metal and plastic, yet the term is not universally defined nor commonly recognized. It does not appear in the current I-Codes. The concept of cladding and substrate layers separated by a cavity that allows water to drain and air flow to accelerate drying is the most basic understanding of how a rainscreen system works. Defining the term rainscreen provides a common understanding of the base system as performance requirements are developed and placed into the code.

Bibliography: This Section was developed and approved by the Rainscreen Association in North America (RAINA), an 501c6 industry association dedicated to serving the rainscreen market in North America.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
By adding Section 1410, the code can properly address requirements for rainscreens.

FS151-21

FS152-21

IBC: 2603.1.2 (New), TABLE 2603.1 (New)

Proponents: Jay Crandell, P.E., ABTG/ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council
(jcrandell@aresconsulting.biz)

2021 International Building Code

Add new text as follows:

2603.1.2 Insulating Sheathing. Foam plastic materials used as *insulating sheathing* shall comply with the provisions of Section 2603 and the material standards in Table 2603.1.

TABLE 2603.1
MATERIAL STANDARDS FOR FOAM PLASTIC INSULATING SHEATHING

Expanded Polystyrene (EPS)	ASTM C578
Extruded Polystyrene (XPS)	ASTM C578
Polyisocyanurate	ASTM C1289

Reason Statement: In the last code cycle, a material standard for spray-applied foam plastic (ICC-1100) was added in Section 2603.1.1. The foam plastic insulating sheathing industry would like to add their material standards through the addition of Section 2603.1.2 and Table 2603.1. These are the current product standards referenced in Table 1508.2 for roof applications. But, the applications of these materials extend beyond roofs and, therefore, the material standards should be referenced in Chapter 26. No specific product types (e.g., Type I, Type II, etc.) are specified because Chapter 26 covers a wide range of product applications including floors, walls, roofs, etc.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal recognizes existing material standards applicable to Chapter 26 and, therefore, has no cost impact.

FS152-21

FS153-21

IBC: 2603.4.1.4. (New)

Proponents: Paul Duffy, representing American Chemistry Council - Spray Foam Coalition (pduffy@jpaduffy.com)

2021 International Building Code

Add new text as follows:

2603.4.1.4. Separately controlled climate structures. In nonsprinklered buildings, foam plastic having a thickness that does not exceed 4 inches (102 mm) and a maximum flame spread index of 75 is permitted in separately controlled climate structures where the aggregate floor area does not exceed 400 square feet (37 m²) and the foam plastic is covered by a metal facing not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41mm). A thickness of up to 10 inches (254 mm) is permitted where protected by a thermal barrier.

Reason Statement: Section 2603.4.1.3 describes interior finishes protecting foam plastic in freezers and walk in coolers. This section requires foam plastic to be covered by a metal facing not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41mm). A maximum thickness of 4 inches (102 mm) of foam plastic insulation is provided; up to 10 inches (254 mm) is permitted where foam is protected by a thermal barrier. The limitation on the size of these structures is 400 square feet and the limitations on foam plastic are a maximum flame spread index of 75. For reference, the existing section 2603.4.1.3: reads as follows:

2603.4.1.3. Walk-in coolers. In nonsprinklered build-ings, foam plastic having a thickness that does not exceed 4 inches (102 mm) and a maximum flame spread index of 75 is permitted in walk-in coolers or freezer units where the aggregate floor area does not exceed 400 square feet (37 m²) and the foam plastic is covered by a metal facing not less than 0.032-inch-thick (0.81 mm) aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41mm). A thickness of up to 10 inches (254 mm) is permitted where protected by a thermal barrier.

Currently, there are no specific requirements for foam used in controlled climate buildings that are separate or adjacent to structures. The proposed new section would set similar design requirements (i.e. similar to those in Section 2603.4.1.3) for “separately controlled climate spaces” that are not intended for normal occupancy. Typical uses for these spaces might include equipment rooms that require separate conditioning (usually cooling), rooms for protecting certain foods and liquids from freezing (requiring basic heating to above freezing temperatures), etc. Like Section 2603.4.1.3, a size limitation of 400 square feet for these structures would apply.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal seeks to clarify requirements to make design criteria similar to similar types of structures.

FS153-21

FS154-21

IBC: 713.8

Proponents: Richard Grace, representing Fairfax County, Virginia (richard.grace@fairfaxcounty.gov)

2021 International Building Code

Revise as follows:

713.8 Penetrations. Penetrations in a *shaft enclosure* shall be protected in accordance with Section 714 as required for *fire barriers or horizontal assemblies or both*. Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a *shaft enclosure*.

Reason Statement: Section 713.2 states that a shaft shall be constructed as *fire barriers or horizontal assemblies or both*. In the 2006 code, "horizontal assemblies" was added to Section 713.2, but was not reflected in the penetrations section of 713.8. This change coordinates the penetration requirements with the current language for shaft construction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This is a clarification change which shouldn't effect the cost of construction.

FS154-21

FS155-21

IBC: 803.13

Proponents: Matthew Dobson, representing Vinyl Siding Institute (mdobson@vinylsiding.org)

2021 International Building Code

Revise as follows:

803.13 Interior finish requirements based on occupancy. *Interior wall and ceiling finish* shall have a classification ~~flame-spread-index~~ not less ~~greater~~ than that 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.

Reason Statement: This is a simple editorial change, as referenced in Table 803.13 are not just about flame spread but are also include the smoke developed index, so it should reference the complete classification as defined in Section 803.1.2 (i.e. A, B, C).

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Simply editorial.

FS155-21

FS156-21

IBC: 1403.9, 1403.12

Proponents: Matthew Dobson, representing Vinyl Siding Institute (mdobson@vinylsiding.org)

2021 International Building Code

Revise as follows:

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.

1403.12 Polypropylene siding. *Polypropylene siding* shall be certified and labeled as conforming to the requirements of D7425/D7425M—13 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.

Reason Statement: This change is a simple edit to these sections of the code that make it in line with the defined term "approved agency". The term "approved quality control agency" is not defined.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Editorial.

FS156-21

FS157-21

IBC: 1405.1.1

Proponents: Jeffrey H. Greenwald, North American Modern Building Alliance, representing North American Modern Building Alliance (jgreenwald@operativegreenwald.com)

2021 International Building Code

Revise as follows:

1405.1.1 Types I, II, III and IV construction. On buildings of Types I, II, III and IV construction, *exterior wall coverings* shall be permitted to be constructed of combustible materials, complying with the following limitations:

1. Combustible *exterior wall coverings* shall not exceed 10 percent of an *exterior wall* surface area where the *fire separation distance* is 5 feet (1524 mm) or less.
2. Combustible *exterior wall coverings* shall be limited to 40 feet (12 192 mm) in height above *grade plane*.

Exceptions:

1. *Metal composite material (MCM) systems* complying with Section 1406.
 2. *Exterior insulation and finish systems (EIFS)* complying with Section 1407.
 3. *High-pressure decorative exterior-grade compact laminate (HPL) systems* complying with Section 1408.
 4. *Exterior wall coverings containing foam plastic insulation* complying with Section 2603.5.
3. Combustible *exterior wall coverings* constructed of *fire-retardant-treated wood* complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the *fire separation distance* is 5 feet (1524 mm) or less and shall be permitted up to 60 feet (18 288 mm) in height above *grade plane* regardless of the *fire separation distance*.
 4. Wood *veneers* shall comply with Section 1404.5.

Reason Statement: Section 1405.1.1 permits limited use of combustible exterior wall coverings on Types I – IV construction, however, there is a conflict that requires correction. Limitation #2 (maximum 40-ft in height) conflicts with other sections in Chapters 14 and 26 containing provisions for these exterior wall assemblies and exterior wall covering installations that are greater than 40-ft. in height.

Multiple other sections of Chapter 14 (1406, 1407, and 1408) and Section 2603.5 more specifically address uses of materials in exterior wall assemblies beyond the 40-ft height limitation when successful testing to NFPA 285 is demonstrated. This proposal provides appropriate exceptions to Limitation 2 and references to those sections of the Code providing the applicable information regarding use on Types I-IV construction greater than 40-ft in height.

The North American Modern Building Alliance (NAMBA) is focused on addressing fire safety through the development and enforcement of building codes. Members of NAMBA are: ACC Center for the Polyurethanes Industry, ACC North American Flame Retardant Alliance, Atlas Roofing Corp., BASF Corporation, Carlisle Construction Materials, Covestro, DuPont, EIFS Industry Members Association, GAF, Huntsman, Kingspan Insulation LLC, Metal Construction Association, Owens Corning, Polyisocyanurate Insulation Manufacturers Association, Rmax - A Business Unit of the Sika Corporation.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposal does not change existing performance or construction requirements.

FS157-21

FS158-21

IBC: 1405.1.1

Proponents: James Smith, American Wood Council, representing American Wood Council (jsmith@awc.org)

2021 International Building Code

Revise as follows:

1405.1.1 Types I, II, III and IV-HT construction. On buildings of Types I, II, III and IV-HT construction, *exterior wall coverings* shall be permitted to be constructed of combustible materials, complying with the following limitations:

1. Combustible *exterior wall coverings* shall not exceed 10 percent of an *exterior wall* surface area where the *fire separation distance* is 5 feet (1524 mm) or less.
2. Combustible *exterior wall coverings* shall be limited to 40 feet (12 192 mm) in height above *grade plane*.
3. Combustible *exterior wall coverings* constructed of *fire-retardant-treated wood* complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the *fire separation distance* is 5 feet (1524 mm) or less and shall be permitted up to 60 feet (18 288 mm) in height above *grade plane* regardless of the *fire separation distance*.
4. Wood *veneers* shall comply with Section 1404.5.

Reason Statement: The provision to allow exterior wall coverings to be of combustible materials is inconsistent with the exterior walls covering requirements for Type IV-A, IV-B, and IV-C. Even though this subsection is limited to walls that are no more than 40 ft. in height (limitation 2.) and 60 ft. in height (limitation 3.) there is no similar allowance for Type IV-A, IV-B and IV-C. Prior to the 2021 IBC, Type IV (now designated Type IV-HT) exterior walls coverings were regulated by this section and this change maintains that historical allowance without creating a conflict with the exterior wall protection requirements in subsections 602.4.1.1 (Type IV-A), 602.4.2.1 (Type IV-B) and 602.4.3.1 (Type IV-C). Section 602.4 clearly prohibits all combustible material of any height on the outside of exterior walls in Types IV-A, IV-B, and IV-C. This proposal eliminates an oversight that creates a conflict in the current code. This does not effect the requirement for noncombustible protection of 40 minutes on the exterior side of exterior walls in those types of construction.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

We feel this change is essentially editorial in nature in that it is only clarifying this allowance should only apply to Type IV-HT, rather than including the new Types IV-A, IV-B and IV-C.

FS158-21

FS159-21

IBC: 901.6, 901.6.1, [F] 901.6.2, [F] 901.6.2.1, [F] 901.6.2.2, 901.6.3, 901.6.4

Proponents: Jeffrey Shapiro, representing Self (jeff.shapiro@intlcodeconsultants.com)

THIS PROPOSAL WILL BE HEARD BY THE FIRE CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2021 International Building Code

901.6 Supervisory service. Where required, *fire protection systems* shall be monitored by an approved supervising station in accordance with NFPA 72.

901.6.1 Automatic sprinkler systems. *Automatic sprinkler systems* shall be monitored by an *approved* supervising station.

Exceptions:

1. A supervising station is not required for *automatic sprinkler systems* protecting one- and two-family dwellings.
2. Limited area systems in accordance with Section 903.3.8.

Delete without substitution:

~~[F] 901.6.2 Integrated testing.~~ Where two or more fire protection or *life safety systems* are interconnected, the intended response of subordinate fire protection and *life safety systems* shall be verified when required testing of the initiating system is conducted. In addition, integrated testing shall be performed in accordance with Sections 901.6.2.1 and 901.6.2.2.

~~[F] 901.6.2.1 High-rise buildings.~~ For high-rise buildings, integrated testing shall comply with NFPA 4, with an integrated test performed prior to issuance of the certificate of occupancy and at intervals not exceeding 10 years, unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. If an equipment failure is detected during integrated testing, a repeat of the integrated test shall not be required, except as necessary to verify operation of fire protection or life safety functions that are initiated by equipment that was repaired or replaced.

~~[F] 901.6.2.2 Smoke control systems.~~ Where a fire alarm system is integrated with a smoke control system as outlined in Section 909, integrated testing shall comply with NFPA 4, with an integrated test performed prior to issuance of the certificate of occupancy and at intervals not exceeding 10 years, unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. If an equipment failure is detected during integrated testing, a repeat of the integrated test shall not be required, except as necessary to verify operation of fire protection or life safety functions that are initiated by equipment that was repaired or replaced.

Revise as follows:

901.6.2 901.6.3 Fire alarm systems. Fire alarm systems required by the provisions of Section 907.2 of this code and Sections 907.2 and 907.9 of the International Fire Code shall be monitored by an *approved* supervising station in accordance with Section 907.6.6 of this code.

Exceptions:

1. Single- and multiple-station smoke alarms required by Section 907.2.11.
2. Smoke detectors in Group I-3 occupancies.
3. Supervisory service is not required for *automatic sprinkler systems* in one- and two-family dwellings.

901.6.3 901.6.4 Group H. Supervision and monitoring of emergency alarm, detection and automatic fire-extinguishing systems in Group H occupancies shall be in accordance with the *International Fire Code*.

Reason Statement: Editorial. The deleted text is sourced from material added to IFC Section 901.6 in 2021. However, while the IBC and IFC both include sections numbered as 901.6, IBC Section 901.6 is a different topic, and the IFC text for the same section number should not have been duplicated in the IBC, which is not scoped to include ITM.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Editorial. No cost impact.

FS159-21

FS160-21

IBC: 603.1, [F] 806.5, [F]806.6, 806.6.1 (New), [F]806.7, [F]806.8, [F]806.9

Proponents: Marcelo Hirschler, GBH International, representing self (mmh@gbhint.com)

THIS CODE CHANGE WILL BE HEARD BY THE FIRE CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THAT COMMITTEE.

2021 International Building Code

Delete without substitution:

~~[F] 806.5 Foam plastic. Foam plastic used as trim in any occupancy shall comply with Section 2604.2.~~

Revise as follows:

~~[F] 806.6~~ **806.5 Pyroxylin plastic.** Imitation leather or other material consisting of or coated with a pyroxylin or similarly hazardous base shall not be used in Group A occupancies.

~~[F] 806.7~~ **806.6 Interior trim.** Material, other than foam plastic used as interior trim, shall have a minimum Class C flame spread and smoke-developed index when tested in accordance with ASTM E84 or UL 723, as described in Section 803.1.2. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the specific wall or ceiling area to which it is attached.

Add new text as follows:

806.6.1 Foam plastic. Foam plastic used as interior trim in any occupancy shall comply with Section 2604.2.

Revise as follows:

~~[F] 806.8~~ **806.7 Interior floor-wall base.** Interior floor-wall base that is 6 inches (152 mm) or less in height shall be tested in accordance with Section 804.2 and shall be not less than Class II. Where a Class I floor finish is required, the floor-wall base shall be Class I.

Exception: Interior trim materials that comply with Section 806.7.

~~[F] 806.9~~ **806.8 Combustible lockers.** Where lockers constructed of combustible materials are used, the lockers shall be considered to be interior finish and shall comply with Section 803.

Exception: Lockers constructed entirely of wood and noncombustible materials shall be permitted to be used wherever interior finish materials are required to meet a Class C classification in accordance with Section 803.1.2.

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:

1. Fire-retardant-treated wood shall be permitted in:
 - 1.1. Nonbearing partitions where the required fire-resistance rating is 2 hours or less except in shaft enclosures within Group I-2 occupancies and ambulatory care facilities.
 - 1.2. Nonbearing exterior walls where fire-resistance-rated construction is not required.
 - 1.3. Roof construction, including girders, trusses, framing and decking.

Exceptions:

1. In buildings of Type IA construction exceeding two stories above grade plane, fire-retardant-treated wood is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6096 mm).
2. Group I-2, roof construction containing fire-retardant-treated wood shall be covered by not less than a Class A roof covering or roof assembly, and the roof assembly shall have a fire-resistance rating where required by the construction type.
- 1.4. Balconies, porches, decks and exterior stairways not used as required exits on buildings three stories or less above grade plane.

2. Thermal and acoustical insulation, other than foam plastics, having a *flame spread index* of not more than 25.

Exceptions:

1. Insulation placed between two layers of noncombustible materials without an intervening airspace shall be allowed to have a *flame spread index* of not more than 100.
2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a *flame spread index* of not more than 200.
3. Foam plastics in accordance with Chapter 26.
4. *Roof coverings* that have an A, B or C classification.
5. *Interior floor finish* and floor covering materials installed in accordance with Section 804.
6. Millwork such as doors, door frames, window sashes and frames.
7. *Interior wall and ceiling finishes* installed in accordance with Section 803.
8. *Trim* installed in accordance with Section 806.6 ~~806~~.
9. Where not installed greater than 15 feet (4572 mm) above grade, show windows, nailing or furring strips and wooden bulkheads below show windows, including their frames, aprons and show cases.
10. Finish flooring installed in accordance with Section 805.
11. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and that do not establish a *corridor* serving an *occupant load* of 30 or more shall be permitted to be constructed of *fire-retardant-treated* wood, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.
12. *Stages* and *platforms* constructed in accordance with Sections 410.2 and 410.3, respectively.
13. Combustible *exterior wall coverings*, balconies and similar projections and bay or oriel windows in accordance with Chapter 14 and Section 705.2.3.1.
14. Blocking such as for handrails, millwork, cabinets and window and door frames.
15. Light-transmitting plastics as permitted by Chapter 26.
16. Mastics and caulking materials applied to provide flexible seals between components of *exterior wall* construction.
17. Exterior plastic *veneer* installed in accordance with Section 2605.2.
18. Nailing or furring strips as permitted by Section 803.15.
19. Heavy timber as permitted by Note c to Table 601 and Sections 602.4.4.4 and 705.2.3.1.
20. Aggregates, component materials and admixtures as permitted by Section 703.2.1.2.
21. Sprayed fire-resistant materials and intumescent and mastic fire-resistant coatings, determined on the basis of *fire resistance* tests in accordance with Section 703.2 and installed in accordance with Sections 1705.15 and 1705.16, respectively.
22. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 714.
23. Materials used to protect *joints* in fire-resistance-rated assemblies in accordance with Section 715.
24. Materials allowed in the concealed spaces of buildings of Types I and II construction in accordance with Section 718.5.
25. Materials exposed within plenums complying with Section 602 of the International Mechanical Code.
26. Wall construction of freezers and coolers of less than 1,000 square feet (92.9 m²), in size, lined on both sides with noncombustible materials and the building is protected throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
27. Wood nailers for parapet flashing and roof cants.

Reason Statement: This is simply an editorial change. Presently Section 603.1 item 8 refers "trim" to section 806 but section 806 contains other materials than trim and the definition of trim as "Picture molds, chair rails, baseboards, handrails, door and window frames and similar decorative or protective materials used in fixed applications." might lead users to think that all of that is covered, including items such as decorative materials. In section 806, foam plastic trim is covered in 806.5 and interior trim is covered in 806.7). Foam plastic trim should be a subsection of interior trim and section 603 should refer to the trim section. This proposal just moves sections around without changing the intended meaning.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This simply moves sections around to improve the usability.

