IBC — Fire Safety

2015 GROUP A PUBLIC COMMENT AGENDA

SEPTEMBER 30 – OCTOBER 5, 2015
LONG BEACH CONVENTION CENTER
LONG BEACH, CA

ICC
INTERNATIONAL CODE COUNCIL®

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FS1-15

703.4, 703.4 (New)

Proposed Change as Submitted

Proponent : Jeffrey Shapiro, Tyco Fire Protection Products, representing Tyco Fire Protection Products

2015 International Building Code

Delete and substitute as follows:

~~**703.4 Automatic sprinklers.** Under the prescriptive fire-resistance requirements of this code, the *fire-resistance rating* of a building element, component or assembly shall be established without the use of *automatic sprinklers* or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the *building official* allowed by Sections 104.10 and 104.11.~~

703.4 Automatic Sprinklers Assemblies utilizing fire sprinklers as an alternative to complying with a required fire resistance rating for a building element, component or assembly shall only be permitted where approved by the Building Official in accordance with Sections 104.10 and 104.11.

Reason: This proposal is based on text that was agreed to by major parties on both sides of the sprinklered-protected assembly issue during the last NFPA code cycle. At the second revision meeting of the NFPA Technical Committee on Fire Protection Features, a great deal of effort went into gaining this agreement, and it was supported by a majority of the committee members in attendance. Following the meeting, NFPA distributed the recommendation to the full committee for balloting, and it fell short of the required majority to advance in the process. Nevertheless, the proposed text provides a cleaner way of conveying the intent of this section, and it warrants consideration by ICC, recognizing that previous efforts to delete the section or argue that it is not needed have not been successful.

This text will make it clear that a sprinkler-protected assembly is an alternative to a fire-resistive assembly that requires approval of the building official, as opposed to being a fire-resistive assembly. This "alternative to" approach is consistent with terminology approved by ICC-ES for inclusion AC385 as a basis for evaluating assemblies that use window sprinklers.

Cost Impact: Will not increase the cost of construction
The proposal simply clarifies current provisions.

FS1-15 : 703.4-SHAPIRO5682

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that this should not be approved at this point as there were still many issues between the parties involved in the testimony. Further, the committee felt that the existing language was better as it was more positive than prohibitive and that the two referenced standards in the existing

language should stay and were appropriate.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Jeffrey Shapiro, representing Tyco Fire Protection Products (jeff.shapiro@intlcodeconsultants.com); Daniel Nichols, representing New York State Dept. of State (dan.nichols@dos.ny.gov) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

703.2 Fire-resistance ratings. The *fire-resistance rating* of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E 119 or UL 263, without the use of automatic sprinklers or any other fire suppression system being incorporated as part of the test, or in accordance with Section 703.3. The *fire-resistance rating* of penetrations and fire-resistant joint systems shall be determined in accordance Sections 714 and 715, respectively.

703.3 Methods for determining fire resistance. The application of any of the methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E 119 or UL 263. The required *fire resistance* of a building element, component or assembly shall be permitted to be established by any of the following methods or procedures:

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 E 119 or UL 263.
5. Alternative protection methods as allowed by Section 104.11.
6. Fire-resistance designs certified by an approved agency.

~~**703.4 Automatic sprinklers.** Under the prescriptive fire-resistance requirements of this code, the *fire-resistance rating* of a building element, component or assembly shall be established without the use of *automatic sprinklers* or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the *building official* allowed by Sections 104.10 and 104.11.~~

Commenter's Reason: This comment attempts to capture discussion points from Memphis and previous meetings and provide a simpler approach to dealing with limiting the E119 test protocol to not include fire suppression systems. Although E119 doesn't allow this, it is understood that some interest groups want the point

emphasized in the IBC. Technical restrictions in 703.4 have been relocated to Section 703.2, since this is where compliance with E119 is established in the IBC. It's a more suitable place for the fire-suppression system limitation to reside. Alternatives to E119, including the reference to alternative methods per Section 104.11, will once again be consolidated in 703.3 without having to rely on a separate section (703.4) that is redundant with respect to performance based alternatives. If you compare the text of the public comment with the current text in 703.4, you will see that it is closely aligned so as to maintain the intent of current provisions while eliminating the ongoing confusion and concern associated with Section 703.4. Note that existing subsections of Section 703.2 are to be retained without change.

FS1-15

FS2-15
703.4

Proposed Change as Submitted

Proponent : Daniel Nichols, New York State Division of Building Standards and Codes, representing New York State Division of Building Standards and Codes (dnichols@dos.state.ny.us)

2015 International Building Code

Delete without substitution:

~~**703.4 Automatic sprinklers.** Under the prescriptive fire-resistance requirements of this code, the *fire-resistance rating* of a building element, component or assembly shall be established without the use of *automatic sprinklers* or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the *building official* allowed by Sections 104.10 and 104.11.~~

Reason: This proposal deletes language that prohibits the use of automatic sprinklers or other fire suppression systems from being considered in a fire resistance rating of a building material.
The use of fire protection systems, including sprinklers, are used to activate or provide passive fire protection features in several locations in the code, reference standards, and evaluation reports. Examples include:

Dropping magnet power on door hold-open devices when sprinkler flow activates the building notification system

Initiating the activation of fire-resistance rated power dividers to create separate fire areas within a building

Smoke and heat vent activation due to fire detection and/or sprinkler flow

Alternative elevator lobby products that activate due to automatic detector activiation

Water curtains around open escalator openings that are otherwise required to be enclosed

Water curtains on gasketed glass for atrium separation

The activation of all of these products makes each one of them go from no protection to full expected protection because of a fire protection system. Based on a review of the information regarding the inclusion of this code section, the potential failure of a sprinkler system was a main concern in the debate. I submit that the failure rate of sprinklers is the same whether it is part of a passive fire protection system or part of the activation sequence to get a passive fire protection system in place.

In regards to the specific language, it appears the goal was to prohibit the use of any system that utilized automatic sprinklers or fire suppression systems from the prescriptive requirements of this code. This is confusing language as it could be interpreted to only apply to IBC Section 721 (since the direct reference is not provided) or does it apply to all prescriptive designs, such as the UL directories? The language does not make it clear for the building official and, in turn, can potentially confuse the issue on the reference to 104.11.

From an application perspective, the use of automatic sprinkler water curtains has been permitted for many years as a method to increase the allowable openings in buildings (along with all of the above mentioned applications). Allowing sprinkler

heads that are part of fire ratings met a need in several applications we have dealt with in New York (based on ES report approved products), including the protection of required openings for light in existing buildings undergoing change of occupancy, and glazing needed for security purposes (both for the visual needs and to address the needs of high-impact glazing).

Thank you for your consideration. I understand that this topic has been fully vetted in previous code development cycles and thorugh the ICC-ES process. However, I believe that the I-Codes should be coordinated to the point that the interaction and reliance between passive and active fire protection systems should be consistent.

Cost Impact: Will not increase the cost of construction
The passage of the proposal will allow more choice in compliance methods for fire rated products.

FS2-15 : 703.4-NICHOLS5725

Public Hearing Results

Committee Action: Disapproved

Committee Reason: Although alternative methods and materials are covered in Sections 104.10 and 104.11, the committee felt that the existing language should remain in the code as it clarified that, in general, automatic sprinklers cannot be used as part of an assembly that is tested to establish a fire resistance rating in accordance with the requirements of ASTM E119 or UL 263.

Assembly Motion: As Submitted
Online Vote Results: Failed
Support: 25.91% (107) Oppose: 74.09% (306)
Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : David Collins, representing The American Institute of Architects (dcollins@preview-group.com) requests Approve as Submitted.

Commenter's Reason: The International Building Code relies upon fire suppressions sytems to provide early warning and activtion of various passive fire protection devices as noted in the reason statement. This section of the code does not allow those specific adjustments to the requirements for fire resistance, that is contrary to those other provisions, and is confusing to everyone using the code. Fire suppression systems have been used and are recognized throughout the code as the basis for making buildings and occupants safer. To retain this statement in the code at least insinuates that these systems are not an integral part of fire and life safety in the ICC Codes, which is not true.

Public Comment 2:

Proponent : Ali Fattah, City of San Diego, representing City of San Diego (afattah@sandiego.gov) requests Disapprove.

Commenter's Reason: This public comment is submitted requesting disapproval. This issue was heavily debated in two forums the ICC Fire Safety Committee during the 2012 and 2015 IBC cycle at at the ICC Evaluation Services before the ICC-ES Evaluation Committee. The evaluation criteria for protecting glass with sprinklers in lieu of a fire barrier have been clarified and the scope of the evaluation and application has been limited. The section is necessary to allow the Building Official to request an evaluation report that at least give design criteria for the sprinklers and allow for almost a prescriptive approach. Absent this section the evaluation will have to be case by case and ICC ES will not maintain a report or criteria since the code does not address the issue. The Assembly vote was 74.09 % to oppose the assembly motion for As submitted and thereby affirm the committee vote to disapprove the code change. We urge the voting membership to support the decision of the Fire Safety Committee and to disapprove the code change.

FS2-15

FS3-15

703.5.1, Chapter 35

Proposed Change as Submitted

Proponent : Tony Crimi, representing North American Insulation Manufacturers Association (tcrimi@sympatico.ca)

2015 International Building Code

Revise as follows:

703.5.1 Elementary materials. Materials required to be noncombustible shall be tested in accordance with ASTM E 136 or ASTM E2652, using the acceptance criteria in ASTM E136.

Add new standard(s) as follows:
ASTM E2652 - Standard Test Method for Behavior of Materials in a Tube Furnace with a Cone- shaped Airflow Stabilizer, at 750°C.

Reason: Several of the I-Codes have varying definitions of the term "non-combustible material", each based upon the way in which the concept of "non-combustible" is used within that Code. Throughout the ICC code system, the concept of "noncombustible material" is based on the idea that the material should not ignite or burn when subjected to fire or heat
The concept of "noncombustible materials" and "noncombustibility" in terms of types of construction is widely used throughout the International Codes. The IBC, IFC, IEBC and IFGC do not contain a separate definition of "noncombustible", even though they use the terminology "non-combustible materials".

In common usage, the term "noncombustible" is used to denote materials which do not ignite or are not capable of sustaining combustion. The common Dictionary definitions for "noncombustible" are typically as follows:

> *Noncombustible, adj – incapable of being burned (Merriam -Webster's International Dictionary of the English Language, Unabridged, 2013)*

In the traditional use of the terminology and concept of "non-combustible" in the Codes has been based on acceptable performance when tested in accordance with ASTM E136, Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C. Materials passing the test are permitted limited flaming and other indications of combustion. However, these have traditional been acceptable. Understandably, ASTM E136 does not replicate the full spectrum of actual building fire exposure conditions. However, this test method does provide an assessment indicating those materials which do not act to aid combustion or add appreciable heat to an ambient fire.

ASTM has recently published another standard ASTM E2652-09, entitled Standard Test Method for Behavior of Materials in a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C. This test method is similar to ASTM E136, but based on the international standard for Noncombustibility. The key difference between the two standards is in the equipment. The apparatuses in this test method and in Test Method E 136 is that the furnace tube in this test method has a conical air-flow stabilizer section attached at its bottom. Both test methods use cylindrical furnace tubes. Unlike ASTM E136, the test ASTM E2652 Standard does not include mandatory pass/fail criterion. It allows those criteria to be determined by the Codes or other users. Appendix X3 also contains a comparison of results obtained from this apparatus versus ASTM E136. ASTM E136 has already been revised to include ASTM E2652 as an alternate methodology.

Cost Impact: Will not increase the cost of construction
This proposal provides an alternative methodology for use.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2652, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS3-15 : 703.5.1-CRIMI4627

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee agreed that reference to ASTM E136 was appropriate as it internally refers to ASTM E2652. Further, it is not clear in ASTM E2652 that all thermocouples were required, whereas in ASTM E136 they are. Lastly, it is not clear which acceptance criteria in ASTM E136 needs to be applied when testing in accordance ASTM E2652.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Tony Crimi, representing North AMerican Insulation Manufacturers Association (tcrimi@sympatico.ca) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

703.5.1 Elementary materials. Materials required to be noncombustible shall be tested in accordance with ASTM E 136 or ASTM E2652, using the acceptance criteria ~~in~~ and measurements prescribed by ASTM E136.

Modify standard(s) as follows:

Commenter's Reason: The Committee acknowledged that reference to ASTM E2652 was appropriate for the reasons identified. However, there was some uncertainty about which pass/fail criteria would apply. Our intent is to require the same pass/fail criteria as currently exists in ASTM E136, using all fo the thermocouples required by ASTM E136, but using the ASTM E2652 apparatus. The modified language in this public comment further clarifies that when ASTM E2652 is used, the pass/fail criteria and measurements (including the thermocouple measurements) are those required by ASTM E136..

ASTM E2652-12, entitled *Standard Test Method for Behavior of Materials in a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C,* is comparable to ASTM E136, but based on the international standard for Noncombustibility. The key difference between the two standards is in the equipment. The apparatuses in this test method and in Test Method E 136 is that the furnace tube in this test method has a conical air-flow stabilizer section attached at its bottom. Both test methods use cylindrical furnace tubes. Like ASTM E136, the test Standard does not include mandatory pass/fail criterion. It allows those criteria to be determined by the Codes

or other users.

Appendix X3 of ASTM E2652 also contains a comparison of results obtained from this apparatus versus ASTM E136. ASTM E136 has already been revised to include ASTM E2652 as an alternate methodology.

FS3-15

FS4-15
703.7

Proposed Change as Submitted

Proponent : Albert Wege, representing Wege & Company (albertwege@yahoo.com)

2015 International Building Code

Revise as follows:

703.7 Marking and identification. ~~Where there is an accessible concealed floor~~
Fire walls, ~~floor-ceiling or *attic* space, *fire walls*,~~ *fire barriers*, *fire partitions*, *smoke barriers* and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling ~~in the concealed space~~. Such identification shall be located in accessible concealed floor, floor-ceiling or attic spaces; and either:

1. ~~Be~~Include lettering not less than 3 inches (76 mm) in height with a minimum 3/8 inch (9.5 mm) stroke in a contrasting color incorporating the suggested wording. "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS" or other wording, located within 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the wall or partition~~.~~ ; or
2. Include ~~lettering~~ a contrasting color band of not less than 3 inches (~~76~~ 76mm) in height and lettering not less than 1/2 inch (12.7 mm) in height ~~with a minimum 3/8-inch (9.5 mm) stroke in a contrasting color~~ incorporating the suggested wording~~, "~~ : "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS,~~"~~ " or other wording, repeating at intervals not more than 24 inches (610 mm) measured horizontally and continuously along the entire length of the fire wall, fire barrier, fire partition, smoke barrier or smoke partition.

Exception: Walls in Group R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.

Reason: In the 2009 IBC, the marking and identification of fire rated wall assemblies was introduced, to identify critical wall assemblies that protect occupants from fire and smoke spread as a result of breaches within said wall assemblies. Often, maintenance and operation crews, in addition to contractors, breach these wall assemblies to install ductwork, cabling, etc, without knowing that these walls are critical to the protection of the occupants in the event of a fire.
The 2009 IBC allow marking and identification lettering at a minimum of one- half inch (½") (12.7mm) incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS," to be repeated every thirty feet (30'-0") (9144 mm).

The 2012 IBC increased the marking and identification lettering to a minimum of 3" (76 mm) with a 3/8" (9.5mm) stroke incorporating the suggested wording: "FIRE

AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS," to be repeated every thirty feet (30'-0") (9144 mm) and within fifteen feet (15'-0") (4572 mm) of the end of each wall.

The challenge that has been encountered is that while the code section may be followed, placed at every thirty feet (30'-0) (9144 mm), the potential is still present that the lettering may still not be visible if placed behind above ceiling equipment, on other side of a duct, or if a maintenance worker happens to pop a ceiling tile mid-span and not see the text. Despite the three inch (3") (76 mm) lettering heights, these above ceiling spaces are not typically well- illuminated.

The proposal being brought forth in the code change request is to also allow marking and identification lettering at a minimum of one- half inch (½") (12.7mm) incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS, but that the marking and identification is continuous along the entire length of the wall assembly; that is, end- to – end. The suggested wording shall repeat at intervals of every 24" (610 mm) horizontally within a contrasting color ban no less than 3" (76 mm) in height.

Cost Impact: Will not increase the cost of construction
Alternative format.

FS4-15 : 703.7-WEGE3325

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that there were several conflicts in the proposed language, in that item #2 seems more stringent than item #1, the term "or other wording" is subjective and it appeared to require an accessible ceiling in all cases.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Albert Wege, Wege & Company, representing Wege & Company (albertwege@yahoo.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

703.7 Marking and identification.

~~Fire~~ Where there is an accessible concealed floor, floor-ceiling or attic space, fire walls, fire barriers, fire partitions, smoke barriers ~~and~~ , smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling in the concealed space stating "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS." or other wording. Such identification shall be ~~located~~ installed in ~~accessible concealed floor, floor-ceiling or attic spaces; and either~~ one of the following configurations:

1. ~~Include lettering not less than 3 inches (76 mm) in height~~

~~with a minimum 3/8 inch (9.5 mm) stroke in a contrasting color incorporating the suggested wording. "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS" or other wording,~~ Be located within 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the wall or partition~~; or~~

~~2. Include a contrasting color band of~~ . Lettering shall be not less than 3 inches (76mm) in height ~~and lettering not less than 1/2~~ with a minimum 3/8 inch (~~12.7~~ 9.5 mm) stroke in ~~height incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," or other wording, repeating at intervals not more than 24 inches (610 mm) measured horizontally and continuously~~ a contrasting color.

2. Be continuous along the entire length of the ~~fire~~ wall~~, fire barrier, fire partition, smoke barrier~~ or ~~smoke~~ partition. Lettering shall not be less than 3/4 inch (19 mm) in height and shall be repeated at intervals not exceeding 24 inches (609 mm) horizontally within a minimum 3 inch (76 mm) band of contrasting color.

~~**Exception:** Walls in Group R-2 occupancies that do not have a removable decorative ceiling allowing access to the concealed space.~~

Commenter's Reason: The revised modification addresses the following CAH concerns:

1. remediation of conflicting language,
2. clarification for proposed Item # 2 (as an alternate means of compliance) see two figures that follow; and
3. clarification of where conditions warrant compliance with this code section.

FS4-15

FS7-15
704.2, 704.4.1

Proposed Change as Submitted

Proponent : David Tyree, American Wood Council, representing American Wood Council (dtyree@awc.org)

2015 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 located in a wall of light frame construction and located entirely between the top and bottom plates shall be permitted to have the fire resistance ratings provided by the membrane protection provided by the fire-resistance rated wall.

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

Reason: Reason: This proposal is to provide further clarification to a code change proposal that was approved last cycle and is included in the 2015 IBC in Section 704.4. Elements within fire-resistance rated walls of light-frame construction are addressed directly in Section 704.4.1 (Light-frame construction) and can be a part of a fire-resistance rated wall assembly without additional fire protection. Many buildings are built out of typical light frame construction; the concentrated loads from trusses or beams must have a continuous load path to the foundation. Some jurisdictions are interpreting that those construction boundary elements, such as, built-up and solid structural elements, are columns and are requiring them to be provided with individual fire protection. It is the intent of this provision, which has been verified by ICC staff, that it was never the intent to require individual fire protection of these elements, as they are not considered a portion of the primary structural frame.
This proposal was discussed and revised based on comments from the Colorado Chapter ICC Code Changes Committee and clarifies this provision is not intended to address continuous columns, does not have any connections to any elements of a structural frame, and is within a rated wall assembly.
For a complete list of AWC code change proposals and additional information please go to http://www.awc.org/Code-Officials/2015-IBC-Code-Changes.

Cost Impact: Will not increase the cost of construction
By revising this section, there is no additional cost as it clarifies the intent of this code provision. If anything, this proposal will actually save money as some building officials and designers have interpreted this section to require stud packs or built-up columns within a rated wall assembly to be individually fire protected which

increases construction cost.

Public Hearing Results

Committee Action: **Approved as Modified**

Modification:

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 ~~located in a wall~~ that meet the limitations of ~~light frame construction and located entirely between the top and bottom plates shall be permitted to have the fire resistance ratings provided by the membrane protection provided by the fire-resistance rated wall~~ Section 704.4.1.

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.

Committee Reason: The committee agreed that built-up solid structural elements, such as 2 or more vertical framing members, within fire-resistance rated walls of light-frame construction that meet the limitations of Section 704.4.1 can be a part of a fire-resistance rated wall assembly without requiring the individual ecasement protection of Section 704.2. The modification eliminates redundant language by referencing Section 704.4.1 for limitations. Further, the modification appropriately recognizes steel framing members for the same allowable use.

Assembly Motion: **Disapprove**
Online Vote Results: **Failed**
Support: 34.86% (114) Oppose: 65.14% (213)
Assembly Action : **None**

Individual Consideration Agenda

Public Comment 1:

Proponent : Lee Kranz, City of Bellevue, WA, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov); Jonathan Siu, representing City of Seattle Department of Planning & Development (jon.siu@seattle.gov) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

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~~ Wood columns that meet the limitations of Section 704.4.1.

704.4.1 Light-frame construction. Studs, ~~columns~~ boundary elements, and ~~boundary elements~~ wood columns 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*.

Commenter's Reason: The proposal adds "columns" to the list of elements that are allowed to be protected by the wall membrane in light frame construction. For a 1-hour fire-resistance rated wall, this wall membrane can be as little as one layer of 5/8" Type X GWB. Our understanding, based on the testimony and a separate discussion with the proponent at the Committee Action Hearings, is the proponent's intent was to address bundled studs used in king stud applications that could be construed by some building officials to be columns, and therefore, would require individual protection per Section 704.2. However, the proposed language inadvertently and inappropriately extends the same provision to steel columns.

In several jurisdictions in the state of Washington, it is common for steel pipe or tube columns supporting loads from multiple floors above to be embedded in stud walls. These columns can be very heavily loaded--which is why steel is required. Our recollection of the approved assemblies we've seen is that none would allow a single layer of 5/8" Type X GWB to serve as 1-hour rated protection of steel columns

Public Comment 2:

Proponent : Jonathan Siu, City of Seattle Department of Planning & Development, representing City of Seattle Department of Planning & Development (jon.siu@seattle.gov) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

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.~~

704.4.1 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*.

Commenter's Reason: The proposal adds "columns" to the list of elements that are allowed to be protected by the wall membrane in light frame construction. For a 1-hour fire-resistance rated wall, this wall membrane can be as little as one layer of 5/8" Type X GWB. Our understanding, based on the testimony and a separate discussion with the proponent at the Committee Action Hearings, is the proponent's intent was to address bundled studs (a.k.a "ganged studs") used in king and jack stud applications that could be construed by some building officials to be columns, and therefore, would require individual protection per Section 704.2. However, we believe this is based on a misinterpretation of what constitutes a "column." That is, a king stud is not a column. In addition, the proposed language inadvertently and inappropriately extends the same provision to steel columns.

In several jurisdictions in the state of Washington, it is common for steel pipe or tube columns supporting loads from multiple floors above to be embedded in stud walls. These columns can be heavily loaded--which is why steel is required. Our recollection of the approved assemblies we've seen is that none would allow a single layer of 5/8" Type X GWB to serve as 1-hour rated protection of steel columns. If approved as modified by the Committee, this proposal could easily be interpreted to allow that single layer to serve as the protection for a steel pipe or tube column.

Because we believe a king stud composed of bundled studs is not a "column," this public comment resolves the issue by deleting the exception and text that refers to columns. We believe the remaining text will still accomplish the proponent's intent, since king and jack studs are covered by "boundary elements."

Public Comment 3:

Proponent : William Hall, Portland Cement Association, representing Portland Cement Association (jhall@cement.org) requests Disapprove.

Commenter's Reason: It is not unusual to have in-wall columns supporting loads of 20,000 lbs or more. Girder trusses are an example of this. Membrane protection for these type of columns, which are part of the structural frame, is inadequate. No data was presented to justify removing this requirement.

FS7-15

FS9-15 Part I

704.2

Proposed Change as Submitted

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

2015 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 located in unusable space as designated in section 711.2.6 and in Type VA, IIA, or IIIA construction.

Reason: Section 711.2.6 allows the deletion of installing the ceiling membrane of a 1 hour fire resistance rated floor/ceiling assembly over unusable spaces. These spaces are typically crawl spaces or under structural floor areas where the area is not being used for any building use such as mechanical equipment or storage. The concept is that there would not be anything that would start on fire so it does not make sense to delete the membrane of the floor/ceiling assembly but to still require the rating of any structural columns located within the unusable space.

There is not a definition of unusable space in the IBC but the IBC commentary gives the opinion that it is up to the Building Official to verify that there are no combustible materials other than construction elements which would allow effectively allow piping, conduits, and ductwork - nothing that would start a fire.

FOR REFERENCE PURPOSES ONLY:

711.2.6 Unusable space. In 1-hour fire-resistance-rated floor/ceiling aseemblies, the ceiling membrane is not required to be installed over unusable crawl spaces. In 1-hour fire resistance-rated roof assemblies, the floor membrane is not required to be installed where unusable attic space occurs above.

Cost Impact: Will not increase the cost of construction
This change could potentially lower the cost of construction in jurisdictions that have required these primary structural columns in crawl spaces to be individually protected.

FS9-15 Part I : 704.2-PATE3865

Public Hearing Results

Part I

Committee Action: Disapproved

Committee Reason: The committee felt that allowing the elimination of protection for columns in unusable spaces was inappropriate as unusable space is not defined and that storage in this space is not addressed. It would be difficult for a code official to verify that the space was not used for storage after the certificate of occupancy was issued.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Timothy Pate, representing City and County of Broomfield (tpate@broomfield.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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 located in unusable ~~space~~ crawl spaces as designated in section 711.2.6 and in Type VA, IIA, or IIIA construction.

Commenter's Reason: With all due respect to the Fire Safety Committee I want to point out again that Section 711.2.6 already exists and is titled "Unusable space" and basically gives the exception to either not require the ceiling membrane of a 1 hour rated floor ceiling assembly over unusable crawl spaces and to not require the floor membrane of a 1 hour rated roof assembly where unusable attic space occurs above.

My original proposal with my floor modification (which is shown in this public comment) only says that if you have structural members – both primary and secondary – in the unusable crawl space they would not need the fire protection rating if the ceiling membrane was already allowed to not be installed.

The committee comments for disapproving talked about not being able to verify if this space would be used for storage in the future but if the building department approved a building to use section 711.2.6 they also would not have any means of verifying that the area would not be used for storage in the future. A Building Official should be able to approve something based on how plans are submitted.

As my original reason statement explains it does not make sense to allow

the ceiling membrane to be omitted but to still require the structural members to be protected. If there is nothing to burn there should not be any potential for any of the structural items to burn.

FS9-15 Part I

FS9-15 Part II

704.3

Proposed Change as Submitted

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

2015 International Building Code

Revise as follows:

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:**
> 1. Individual encasement protection on all sides shall be permitted on all exposed sides provided the extent of protection is in accordance with the required *fire-resistance rating*, as determined in Section 703.
> 2.Structural members located within unsuable space areas as designated in section 711.2.6 and in Type IIIA, IIA, or VA construction.

Reason: Reason:
Section 711.2.6 allows the deletion of installing the ceiling membrane of a 1 hour fire resistance rated floor/ceiling assembly over unusable spaces. These spaces are typically crawl spaces of under structural floor areas where there the area is not being used for any building use such as mechanical equipment or storage. The concept is that there would not be anything that would start on fire so it does not make sense to delete the membrane of the floor/ceiling assembly but to still require the rating of any primary structural members.

There is not a definition of unusable space in the IBC but the IBC commentary gives the opinion that it is up to Building Official to verify that there are no combustible materials other than construction elements which would allow piping, conduits, and ductwork – nothing that would start a fire.

For reference purposes only:

711.2.6 Unusable space. In 1-hour fire-resistance-rated Floor/ceiling assemblies, the ceiling membrane is not required to be installed over unusable crawl spaces. In 1-hour fire resistance-rated roof assemblies, the floor membrane is not required to be installed where unusable attic space occurs above.

Cost Impact: Will not increase the cost of construction
This change could potentially lower the cost of construction in jurisdictions that have required these primary structural members other than columns in crawl spaces to be individually protected.

Public Hearing Results

Part II

Committee Action: Disapproved

Committee Reason: The committee felt that allowing the elimination of protection for primary structural framing, other than columns, in unusable spaces was inappropriate as unusable space is not defined and that storage in this space is not addressed. It would be difficult for a code official to verify that the space was not used for storage after the certificate of occupancy was issued.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Timothy Pate, representing City and County of Broomfield (tpate@broomfield.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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*.

> **Exceptions:**
> 1. Individual encasement protection on all sides shall be permitted on all exposed sides provided the extent of protection is in accordance with the required *fire-resistance rating*, as determined in Section 703.
> 2.Structural members located within unsuable crawl space areas as designated in section 711.2.6 and in Type IIIA, IIA, or VA construction.

Commenter's Reason: With all due respect to the Fire Safety Committee I want to point out again that Section 711.2.6 already exists and is titled "Unusable space" and basically gives the exception to either not require the ceiling membrane of a 1 hour rated floor ceiling assembly over unusable crawl spaces and to not require the floor membrane of a 1 hour rated roof assembly where unusable attic space occurs above.

My original proposal with my floor modification (which is shown in this public comment) only says that if you have structural members – both primary and secondary – in the unusable crawl space they would not need the fire

protection rating if the ceiling membrane was already allowed to not be installed.

The committee comments for disapproving talked about not being able to verify if this space would be used for storage in the future but if the building department approved a building to use section 711.2.6 they also would not have any means of verifying that the area would not be used for storage in the future. A Building Official should be able to approve something based on how plans are submitted.

As my original reason statement explains it does not make sense to allow the ceiling membrane to be omitted but to still require the structural members to be protected. If there is nothing to burn there should not be any potential for any of the structural items to burn.

FS9-15 Part II

FS11-15

202 (New), 705.2

Proposed Change as Submitted

Proponent : Stephen Thomas, representing Colorado Chapter ICC (sthomas@coloradocode.net)

2015 International Building Code

Add new definition as follows:

SECTION 202 DEFINITIONS

PROJECTION A floor, roof or appendage extending beyond any exterior wall of a building; such as cornices, eave overhangs, exterior decks or balconies, canopies, porte cocheres and similar protrusions.

Revise as follows:

705.2 Projections. ~~Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall~~
Projections shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways and ramps shall comply with Sections 1021 and 1027, respectively. _Projections shall not extend any closer to the line used to determine the fire separation distance than shown in Table 705.2.

> **Exception:**_ Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section for projections between the buildings.

Reason: There appears to be some confusion as to what a projection is or isn't. We have provided a new definition to clarify what they may be. By defining what a projection is, the code user will be able to enforce the code more consistently. We have also revised Section 705.2 to remove the list of projections and replace it with the defined term. The term "projection" appears in many locations throughout the IBC. This definition will provided more guidance for the user.

Cost Impact: Will not increase the cost of construction
This change is a clarification of the code. If anything, the change will reduce the cost of construction because a projection will not be required to fire-resistant rated in some cases.

FS11-15 : 705.2-THOMAS4442

Public Hearing Results

Committee Action: Disapproved

Committee Reason: Defining "projection" may not be appropriate as the term is used in the code for many instances that do not always apply to what this definition is trying to address. Further, inclusion of decks in the proposed definition is inconsistent with the existing provisions in Section 705.2. Lastly, the proponent should consider allowing flexibility in the definition by indicating "such as but not limited to" prior to the list of projection examples within the definition.

Individual Consideration Agenda

Public Comment 1:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

PROJECTION A floor, roof or appendage extending beyond ~~any~~ the exterior wall of a building; such as cornices, eave overhangs, ~~exterior decks or~~ cantilevered balconies~~, canopies, porte cocheres~~ and similar ~~protrusions~~ appendages.

Commenter's Reason: There is a need to define what a projection is but the proposal included canopies and other items that can be large in size and can include usable space. Projections can be located as close as a fire separation distance of 40 inches. Historically balconies have been included and the method of support caused issues during implementation of the UBC where the fire separation distance was measured from the face of the post/beam portion of a supported balcony. The public comment is submitted since the definition should be in the definition chapter and not in the scoping sentence of the section. We heard testimony on FS 18 that Clark County regulated the separation from the face of the deck or supported balcony. What complicates things as well is that the definition of deck was removed from Ch 16 of the IBC in the 2009 IBC so there is no description of whether the balcony is cantilevered or not.

Public Comment 2:

Proponent : Stephen Thomas, Colorado Code Consulting, LLC, representing Colorado Chapter ICC (sthomas@coloradocode.net) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

BUILDING PROJECTION A floor, roof or appendage extending beyond any exterior wall of a building~~;~~ such as , but not limited to cornices, eave overhangs, exterior decks or balconies, canopies, awnings, porte cocheres and similar protrusions.

705.2 Projections. ~~Projections~~ Building projections shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways and ramps shall comply with Sections 1021 and 1027, respectively. Projections shall not extend any closer to the line used to determine the fire separation distance than shown in Table 705.2.

Exception: Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section for projections between the buildings.

Commenter's Reason: The committee felt that a definition would be helpful in the enforcement of the code. However, they felt if needed to be expanded and be more specific to Exterior wall projections. Therefore, we have revised the language to include the term "such as, but not limited" to address projections that may not be included in the definition. We have also changed the title from Projections to Building Projections to differentiate this definition from other sections in the code that use projections in them. For example projection rooms and projections into ramps. It is not our intent to apply this definition to those sections of the IBC.
We feel that this definition is necessary to provide a clearer description of what a projection is. The charging statement essentially defines what it is, but is not comprehensive enough in our opinion. By providing a definition in Chapter 2, the intent will be clearer for the user. There was testimony regarding the inclusion of decks in the definition. It is our opinion that the fire characteristics are the same for decks and balconies. Fires below or adjacent to decks or balconies will act the same. The installation of columns on the outside of a balcony does not change these characteristics.

FS11-15

FS14-15
Table 705.2

Proposed Change as Submitted

Proponent : Victor Cuevas, representing City of Los Angeles

2015 International Building Code

Revise as follows:

TABLE 705.2
MINIMUM DISTANCE OF PROJECTION

FIRE SEPARATION DISTANCE (FSD)	MINIMUM DISTANCE FROM LINE USED TO DETERMINE FSD
0 feet to 2 feet	Projections not permitted
Greater than 2 feet to 3 feet	24 inches
Greater than 3 feet to less than 30 feet	~~24 inches plus 8 inches for every foot of FSD beyond 3 feet or fraction thereof~~ 2' + 2/3(FSD - 3')
30 feet or greater	20 feet

For SI: 1 foot = 304.8 mm; 1 inch = 25.4 mm.

Reason: Add formula 2' + 2/3(FSF - 3') to replace text "24 inches plus 8 inches for every foot of FSD beyond 3 feet or fraction thereof" to simplify use.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction. Revisions to Table 705.2 will simplify the existing requirements and will not affect the current costs of construction.

FS14-15 : T705.2-CUEVAS4802

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee preferred the existing language over the proposed formula based understandability and enforceability.

Assembly Action : **None**

Individual Consideration Agenda

Public Comment 1:

Proponent : Victor Cuevas, representing City of Los Angeles (victor.cuevas@lacity.org) requests Approve as Submitted.

Commenter's Reason: Will attempt to further clarify the issue with the way the current language is written. This will hopefully convince the committee to accept the proposed amendment.

FS14-15

FS15-15

603.1, 705.2.3, 705.2.3.1 (New), 705.2.4 (New), 1406.1, 1406.3, 1406.4

Proposed Change as Submitted

Proponent : Jonathan Siu, representing City of Seattle Department of Planning & Development (jon.siu@seattle.gov)

2015 International Building Code

Revise as follows:

705.2.3 Combustible projections. Combustible projections extending to within 5 feet (1524 mm) of the line used to determine the *fire separation distance* shall be of not less than 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as ~~required~~ permitted by Section ~~1406.3~~ 705.2.3.1.

> **Exception:** Type VB construction shall be allowed for combustible projections in Group R-3 and U occupancies with a fire separation distance greater than or equal to 5 feet (1524 mm).

Add new text 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 Type IV construction in accordance with Section 602.4. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.

Exceptions:

1. On buildings of Type 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 is permitted for pickets and rails or similar guardrail devices that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on buildings of Type III, IV 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.

705.2.4 Bay and oriel windows. Bay and oriel windows shall conform to the type of construction required for the building to which they are attached.

> **Exception:** Fire-retardant-treated wood shall be permitted on buildings three stories or less above grade plane of Type I, II, III or IV construction.

Delete without substitution:

~~**1406.1 General.** Section 1406 shall apply to *exterior wall coverings*;~~

~~balconies and similar projections; and bay and oriel windows constructed of combustible materials.~~

~~**1406.3 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 Type IV construction in accordance with Section 602.4. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.~~

~~**Exceptions:**~~

1. ~~On buildings of Type 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 is permitted for pickets and rails or similar guardrail devices that are limited to 42 inches (1067 mm) in height.~~
3. ~~Balconies and similar projections on buildings of Type III, IV 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.~~

~~**1406.4 Bay and oriel windows.** Bay and oriel windows shall conform to the type of construction required for the building to which they are attached.~~

~~**Exception:***Fire-retardant-treated wood* shall be permitted on buildings three stories or less above grade plane of Type I, II, III or IV construction.~~

Reason: This proposal is editorial in nature, making no technical changes. It simply relocates the provisions that state the protection and type of construction requirements for combustible decks and balconies, and bay and oriel windows from Chapter 14 to Chapter 7. Chapter 14 is mostly about exterior finishes, and these provisions are likely to be missed there. Chapter 7 is a more appropriate location for these provisions, since Section 705.2 already deals with type of construction and fire-resistance rated protection for projections.
Section 1406.1 is deleted since it only contained general charging language, which is not necessary now that only one section remains in Section 1406 (currently 1406.2, to be renumbered to 1406.1).

Cost Impact: Will not increase the cost of construction
Because this is an editorial relocation of existing provisions, there is no change in the regulations and therefore, no change in the cost of construction.

FS15-15 : 705.2.3-SIU4694

Public Hearing Results

Committee Action: Approved as Modified

Modification:

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:

(no changed to items 1 through 12)

13. Combustible exterior wallcoverings, balconies and similar projections and bay or oriel windows in accordance with Chapter 14 and Section 705.2.3.1.

(no changes to items 14 through 18

19. Heavy timber as permitted by Note c to Table 601 and Sections 602.4.7 and ~~1406.3~~705.2.3.1.

(no changes to remaining items)

705.2.4 Bay and oriel windows. Bay and oriel windows constructed of combustible materials shall conform to the type of construction required for the building to which they are attached.

Exception: Fire-retardant-treated wood shall be permitted on buildings three stories or less above grade plane of Type I, II, III or IV construction.

Committee Reason: The committee agreed that relocating these provisions to Chapter 7 from Chapter 14 was more effective from the code user's standpoint. The modifications appropriately correct section references to coordinate with the relocation and correctly clarify that the requirements for bay and oriel windows applied to those constructed of combustible materials.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Marcelo Hirschler, representing GBH International (gbhint@aol.com) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

705.2.4 Bay and oriel windows. Bay and oriel windows ~~constructed of combustible materials~~ shall conform to the type of construction required for the building to which they are attached.

Exception: Fire-retardant-treated wood shall be permitted on buildings

three stories or less above grade plane of Type I, II, III or IV construction.

Commenter's Reason: The added clause "constructed of combustible materials" in section 705.2.4 is unnecessary and will potentially cause problems. For example, aluminum is a noncombustible material used for windows but it needs to conform to the requirements for the appropriate type of construction.

FS15-15

FS16-15
705.8

Proposed Change as Submitted

Proponent : Ali Fattah, City of San Diego Development Services Department, representing City of San Diego (afattah@sandiego.gov)

2015 International Building Code

Revise as follows:

705.8 Openings. Openings in *exterior walls* shall comply with Sections 705.8.1 through 705.8.6. For structures or portions of structures not provided with surrounding exterior walls and with usable area under the horizontal projection of the roof or floor above, exterior wall shall mean the primary structural frame supporting the roof or floor above.

Reason: The proposed code change addresses exterior opening protection for structures and buildings, and portions thereof that do not include surrounding exterior walls.
The IBC does not address the protection of covered exterior portions of a building that cannot be classified as projections and that provide shelter for useable space. The useable space is included in building area and fire area where applicable however the code does not seem to regulate the proximity of the useable space relative to the lot line.

- Projections appear to be elements attached to exterior walls that do not include useable space below.
- Exterior balconies are not defined and appear to be the exception and seem to be regulated similar to eaves and cornices and it is implied that they cantilever from the wall of the building.

Table 601 footnote (f) referenced under primary structural frame requires that the fire resistance of the structural frame to comply with Section 704.10 in addition to Table 601. As a consequence the structural frame on the outside of a building or structure without a surrounding exterior wall is required to comply with Table 602 as if it were a wall. However since the primary structural frame does not comply with the definition for wall it is necessary to modify Section 705.8 to make clear that openings within the primary structural frame are regulated.

Some structures addressed by this code change may include canopies over gasoline pump islands; canopies over play grounds or picnic areas; useable areas under portions of buildings where the upper stories are larger than portions below and closer to a lot line, etc.

Most Building Officials will consider that the face of the building to be the structural frame and would regulate the percentage of exterior openings within, however the IBC as written does not support this interpretation.

Currently as written the IBC implies that if an exterior wall is not provided then the openings on the exterior perimeter are not regulated since they are not openings in an exterior wall. A written interpretation from ICC confirms this.

Cost Impact: Will increase the cost of construction
The proposed code change is necessary for public safety and to provide more consistent application of the exterior wall opening protection requirements. The increased of construction will result is safer communities that are more resilient

when faced with natural disasters that interrupt water supplies and power for extended periods of time since it ensures a protected building perimeter that can limit conflagration hazards.

FS16-15 : 705.8-FATTAH5674

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that these requirements were confusing in that it was not clear when an exterior wall was required. Futher, the committee felt that the requirements would be better located with the fire separation distance requirements in Chapter 6.

Assembly Motion: As Submitted

Online Vote Results: Failed

Support: 32.51% (132) Oppose: 67.49% (274)

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : David Glanville, representing City of San Diego requests Approve as Submitted.

Commenter's Reason: I think the code change is needed since exterior opening protection will drive location more than section 602 through table 602. Also while table 602 applies to exterior walls, section 704.10 requires exterior columns to be protected when there are no walls and protection is required by T 602.

Public Comment 2:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

705.5 Fire-resistance ratings. ~~*Exterior*~~ *Fire-resistance* rated *exterior walls* shall be ~~fire-resistance rated~~ provided to separate occupancies from lot lines based on fire separation distance in accordance with Tables 601 and 602 and this section. The required *fire-resistance rating* of *exterior walls* with a *fire separation distance* of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required *fire-resistance rating* of *exterior walls* with a *fire separation distance* of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

705.8 Openings. Openings in *exterior walls* shall comply with Sections 705.8.1 through 705.8.6. ~~For structures or portions of structures not provided with surrounding exterior walls and with usable area under the~~

~~horizontal projection of the roof or floor above, exterior wall shall mean the primary structural frame supporting the roof or floor above.~~ _

Commenter's Reason: This public comment is submitted in response to testimony and committee member comments during the code action hearings. Opponents were concerned that by stating that the structural frame needed to be considered a wall when determining exterior opening protection. a suggestion was made to add a special section on canopies and and similar structures that have no walls. A suggestion was to also put the code change in Section 705.5 since it was not appropriate in the opening section. The proposed code change takes a different approach and requires a fire resistance to separate an occupancy from a lot line. This will address the majority of the cases since when building area is proposed an occupancy must be assigned to the usable area below the roof overhang. Canopies regulated in Section 3105 are probably not assigned an occupancy unless they cover usable space such as gasoline pump islands, out door dining areas, bank teller drive aisles etc. As presently written the code refers you to a table and seems to imply that ifyou happen to have an exterior wall you protect the wall construction based on fire separation distance. Section 705 intends that a building protect it's neighbor's from itself and itself from it's neighbors. However at a fire separation distance that is 10 ft or greater the exterior portion of the wall does not require protection from fire, openings are still however limited until about 20 ft fire separation for most buildings.

Public Comment 3:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

705.5.1 Canopies and Buildings Without Exterior Walls Canopies, and similar buildings or structures or portions thereof, without surrounding exterior walls shall be located at a fire separation distance of 10 ft or shall comply with Section 705.5 and Section 705.8. Projections beyond the exterior most primary structural frame shall comply with Section 705.2. Exterior wall shall mean the primary structural frame located at the exterior perimeter of the structure.

705.5.1.1 Canopies and Structure Accessory to Group R-3 Attached or detached canopies, and similar buildings or structures or portions thereof, that are accessory to group R-3 and without surrounding exterior walls shall be located at a fire separation distance of 5 ft or shall comply with Section 705.5.1.

705.5.1.2 Canopies and Structures Accessory to Group F, H, S and M Occupancies. Attached or detached canopies, and similar buildings or structures or portions thereof, and that are accessory to other than Group F, H, S and M and without surrounding exterior walls shall comply with Section 705.5 and Section 705.8.

3105.5 Location on Lot Canopies shall be located at a fire separation distance complying with Section 705.5.1.

Commenter's Reason: This public comment is submitted to address comments

raised at the committee action hearings where at least speakers in opposition supported the concept but were opposed to where the code change was proposed. They suggested that canopies be separated out as a unique issued when needs to be determined.
We had difficulty finding an ideal location for the requirement in Section 705. Chapter 6 was ruled out since Section 705.5 refers to Table 602. Additionally Section 705.8.1 Exception # 2 allows buildings whose exterior bearing walls, exterior non bearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings, so it follows that a logical amendment addressing the canopies issue would be a subsection to 705.5.

This code change treats canopies and such open structures at a fire separation distance of 10 ft similar to parking garages in Table 705.8 footnote (g) and table 602 that exempts most walls located at a fire separation distance of 10 ft. Canopies are regulated in Section 3105 and fire separation distance is not addressed so a cross reference is added to the proposed Section.

Public Comment 4:

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

Commenter's Reason: This proposal would require the same protection of exterior openings for open areas under overhangs or cantilevered portion of the building. This proposal would require openings between the structural members (columns and piers of pedestal or cantilevered buildings) to meet the opening protection requirements of 705.8, which would require fire doors, fire shutter or other protective opening provisions, if the opening between the structural members exceeds the percentage of allowable area opening in accordance with table 705.8
We believe this needs more study and investigation to understand the full impace of such a dramatic change. In the change it describes that the areas are "usable" without explanation and no definition. Does this limit the openings between the exterior columns on the facade become the opening that must be protected? This isn't clear, and would cause significant problems in its application of the code.

FS16-15

FS17-15
705.8.1

Proposed Change as Submitted

Proponent : Stephen Thomas, representing Colorado Chapter (sthomas@coloradocode.net)

2015 International Building Code

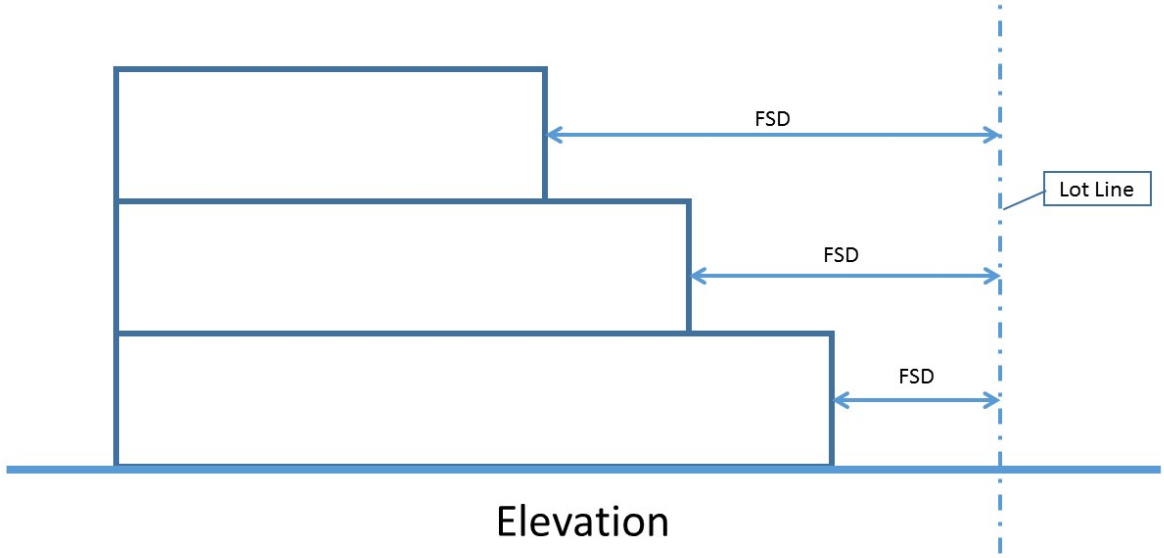
Revise as follows:

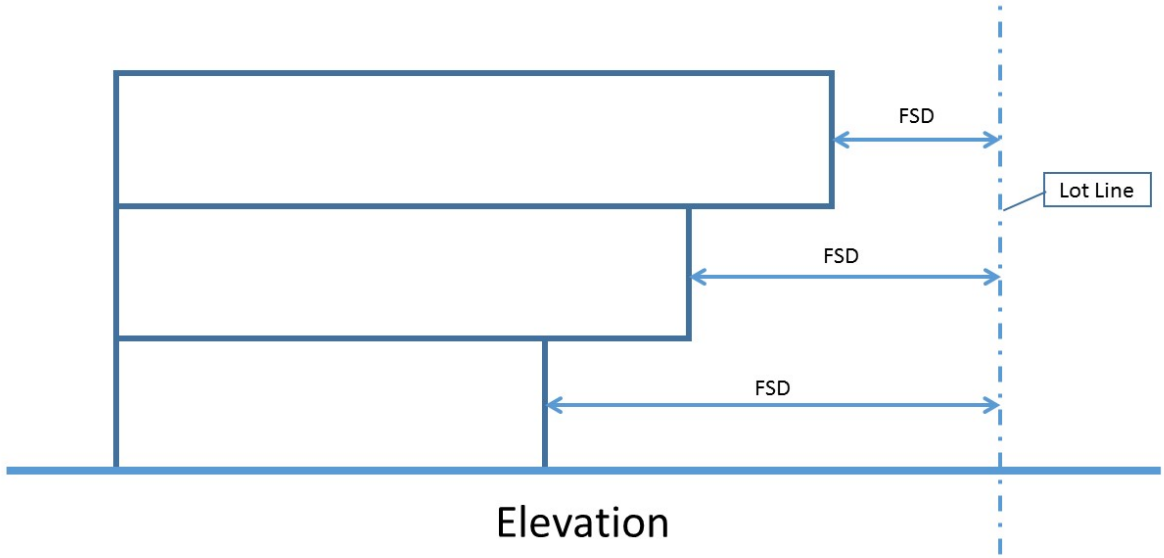
705.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an *exterior wall* in any *story* of a building shall not exceed the percentages specified in Table 705.8 based on the fire separation distance of each individual story.

Exceptions:

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first *story* above grade plane either:
    - 1.1. Where the wall faces a street and has a *fire separation distance* of more than 15 feet (4572 mm); or
    - 1.2. Where the wall faces an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall be not less than 30 feet (9144 mm) in width and shall have access from a street by a posted fire lane in accordance with the *International Fire Code*.
2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.

Reason: The intent of this change is to clarify that the limitation of openings in exterior walls is based on the fire separation distance of each individual story. There appears to be confusion on how to evaluate openings in exterior walls when an upper floor extends out over a lower floor. We believe that the opening protection is determined at the exterior wall of the story, not the wall plane of the story above. Just the opposite would be true if the building was a pyramid style building where the upper floors step back from the floor below. The opening protection would depend on the distance to the lot line at each story, not the first story. Please see attached diagrams.





Cost Impact: Will not increase the cost of construction
The change clarifies the intent of the code. There is no affect on the construction cost.

FS17-15 : 705.8.1-THOMAS4446

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee agreed that this proposal clarifies that the limitation of openings in exterior walls is based on the fire separation distance of each individual story, rather than only based on the FSD of the first story.

Individual Consideration Agenda

Public Comment 1:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov) requests Disapprove.

Commenter's Reason: We urge disapproval of this code change.
The proposed code change was approved by the committee in lieu of FS 18 even though they addressed two different issues. FS 17 addresses the method of measurement. FS 18 address the hazards of usable space under a story of a building that is larger than the story below.

The definition of fire separation distance in Section 202 is a measurement from the building face and is a method of measurement to a reference point whether a lot line or an imaginary line. It stands to reason that if the code intent is for a lot line or imaginary line to be vertical that there should be one line used for measurement purposes. When the term is used the code intends it to be used as a measurement to the same reference so the code change is not necessary. The code change however has a negative consequence and reduces fire protection without technical justification. Additionally the definition add in FS 11 may lead to the portion of the upper story projecting beyond the lower smaller story a projection.

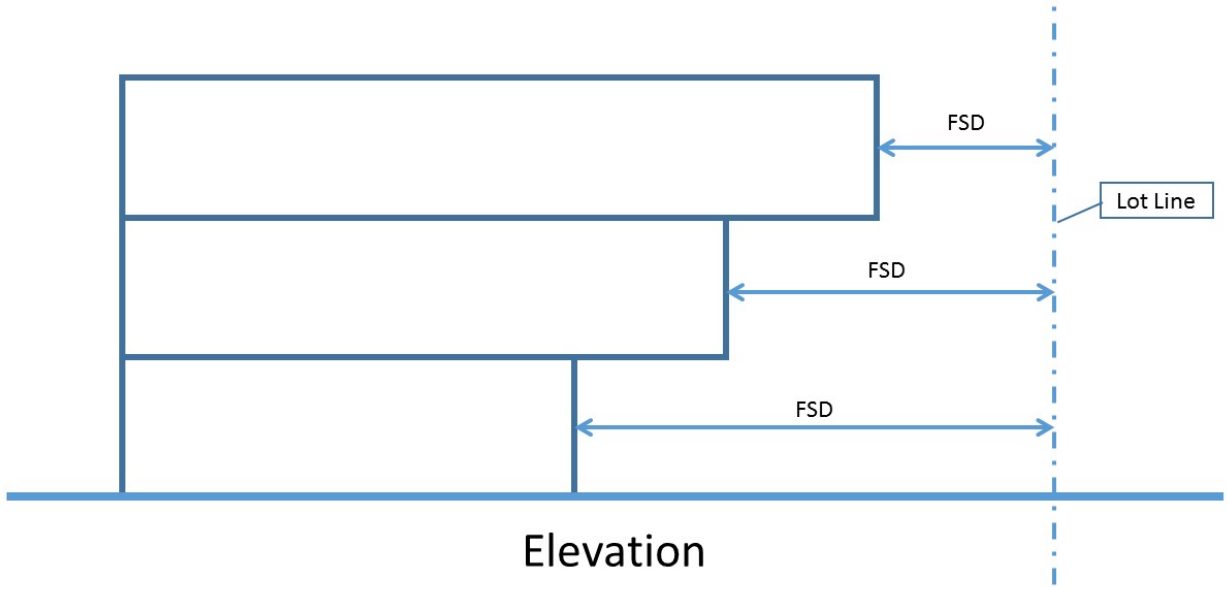
Additionally Section 705.5 and 705.8.1 makes clear that the area measurement for openings is per story based on the fire separation distance (which is to the building face). Evaluation of the inverted wedding cake scenario should be evaluated on a case by case basis and this code change does not allow for that. FS 18 was addressing an issue that Section 705.5 and Table 602 never require an exterior wall but tell when an exterior wall needs to be fire resistance rated based on occupancy, type of construction and fire separation distance. An exterior wall should be required to protect a neighboring property from the hazards of an occupancy and its fire loading. FS 17 would allow a upper story located 6 inches from a lot line with no exterior wall openings to have a story below with no exterior wall with occupants able to touch the neighboring property's fence or event the exterior wall.

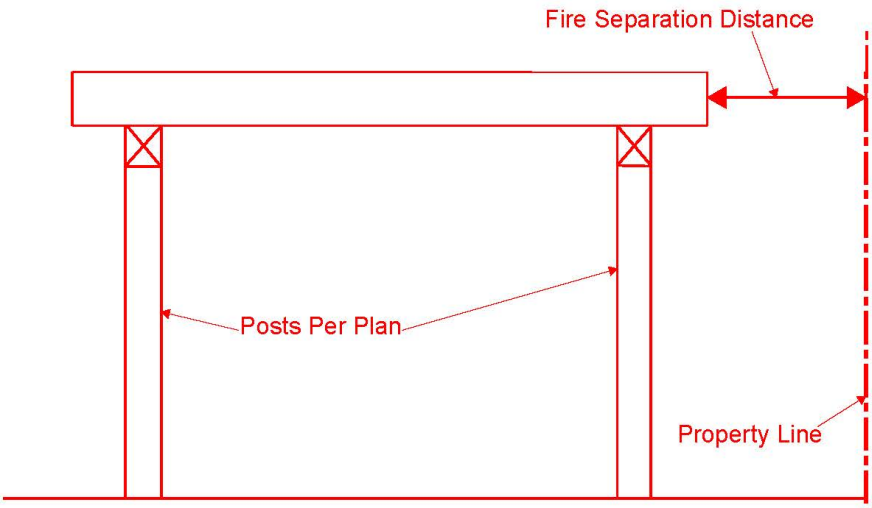
Public Comment 2:

Proponent : Lee Kranz, City of Bellevue, WA , representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov) requests Disapprove.

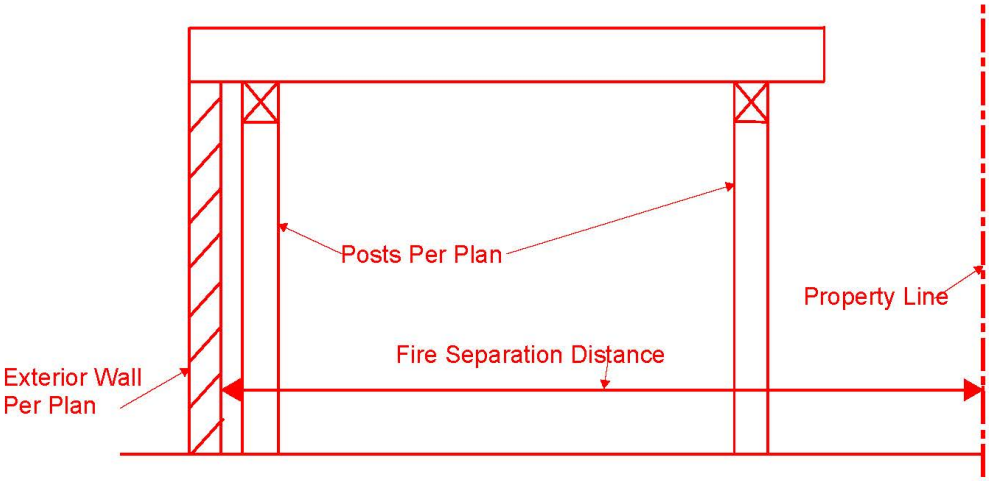
Commenter's Reason: The image below, which was provided in the proponent's original reason statement, shows a multi-story building with upper levels extending closer to the property line than the lower levels. In many cases, areas located below the upper levels would count as floor area based on the definition of *Building area.* The text in this definition states that "Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above". There have been many case studies of conflagration fires due to radiant heat transfering from one building to the projecting horizontal surfaces of another building if that building is located too close to the property line and has not been provided with rated exterior walls and protected openings at the outboard edge of the overhang.
This code change also does not address exterior wall and opening protection for

structures with no exterior walls such as carports (see carport illustrations below). Does constructing a wall below the edge of a carport roof on the side opposite to the property line setback change the way fire would spread from one parcel improvement to the other? Based on this code change, constructing such a wall would allow the open side of the carport to extend all the way to the property line because the setback to the exterior wall would be on the side opposite of the open carport roof edge. This code change has potentially dangerous consequences and should not be approved.





Carport with no exterior walls. Under the current code the setback is measured to edge of roof based on definition of "*Building Area*" and "*Fire Separation Distance*".



Carport with exterior wall. The proposed code change would allow the setback to be measured to the exterior wall located at the opposite side of the carport. This could result in the roof edge having a zero setback without a rated exterior wall or opening protectives adjacent to the property line.

FS17-15

FS18-15
705.8.1

Proposed Change as Submitted

Proponent : Ali Fattah, City of San Diego Development Services Department, representing City of San Diego (afattah@sandiego.gov)

2015 International Building Code

Revise as follows:

705.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an *exterior wall* in any *story* of a building shall not exceed the percentages specified in Table 705.8.

Exceptions:

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first *story* above grade plane either:
    - 1.1. Where the wall faces a street and has a *fire separation distance* of more than 15 feet (4572 mm); or
    - 1.2. Where the wall faces an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall be not less than 30 feet (9144 mm) in width and shall have access from a street by a posted fire lane in accordance with the *International Fire Code*.
2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.
3. <u>In other than Group R-3 occupancies, or Group R-2 occupancies constructed of Type VB construction, unlimited unprotected openings are permitted for useable areas located under portions of a building above when the roof or floor above is located at a fire separation distance is 10 feet or greater.</u>

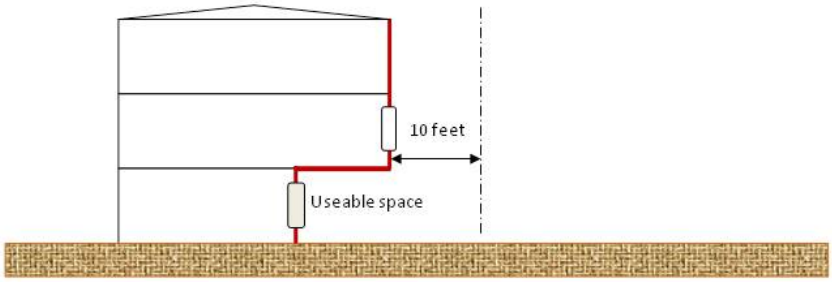
Reason: The IBC does not clearly regulate exterior opening protection when buildings include vertical offsets under which useable space occurs. The useable spaces below pose a hazard to structures and buildings on adjoining properties and no exterior walls exist under the projection of the building above.
Proposed exception # 3 addresses buildings with occupancies other than R-3, and Group R-2 constructed of Type VB construction, since they have been historically separated 5 ft from a lot line. Additionally these buildings will always be protected with sprinklers. The degree of openness provides fire protection benefits and the area will most likely include sprinkler protection unless the space is very tall.

The proposed code change treats outdoor areas under a building, for example outdoor dining in a restaurant part of which is indoors and part of which is under a larger second floor, similarly to parking garages and requires a fire separation distance of 10 ft for openings to not be limited when the structure has no surrounding wall adjacent to a lot line or imaginary line.

The IBC exempts exterior openings on open parking garages, that typically have a very limited or no surrounding exterior walls, from exterior wall opening limits in Table 705.8 when located at a fire separation distance of 10 feet or more.

No size limitation (area, depth) has been added to exempt attached structures with small depths to allow the Building Official flexibility in determining when such structures can be considered as projections if the area below is small enough to not be useable or pose a risk to buildings and structures on adjoining properties.

Most buildings of Type VB and IIB are exempt from exterior opening protection and wall protection when located at a fire separation distance of 10 ft per Table 602 footnote (g) and Section 705.8.1 exception 2. 10 ft appears to be a reasonable fire separation distance to address this issue.



Cost Impact: Will increase the cost of construction
The cost of construction may increase due to the need to enclose the attached structures. Fire resistance of the primary structural frame is required by Section 704.10 so increased fire resistance will not result. The code change will result in more uniform code application.

FS18-15 : 705.8.1-FATTAH5675

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that requiring a space to be enclosed by exterior walls simply because it is usable was unreasonable and could cause a more hazardous condition by not allowing the products of combustion to dissapate as effectively as leaving the space unenclosed. Further, the committee felt that this was a misapplication of the fire separation distance requirements and that previously approved FS17 was a better fix.

Assembly Motion: **As Submitted**
Online Vote Results: **Failed**
Support: 36.52% (126) Oppose: 63.48% (219)
Assembly Action : **None**

Individual Consideration Agenda

Public Comment 1:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

705.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an *exterior wall* in any *story* of a building shall not exceed the percentages specified in Table 705.8.

Exceptions:

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first *story* above grade plane either:
    1.1. Where the wall faces a street and has a *fire separation distance* of more than 15 feet (4572 mm); or
    1.2. Where the wall faces an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall be not less than 30 feet (9144 mm) in width and shall have access from a street by a posted fire lane in accordance with the *International Fire Code*.
2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.
3. In other than Group R-3 occupancies~~,~~ or Group R-2 occupancies constructed of Type VB construction, unlimited unprotected openings are permitted ~~for~~ to separate exterior useable areas located under portions of a building– above when– the~~ roof or floor~~ exterior wall of the story above– is located at a fire separation distance is 10 feet or greater.

Commenter's Reason: This public comment is submitted after consideration of feedback from both the committee and opponents at committee action hearings. Both the original code change and floor modification were not approved by the committee partially because of the committee's action on FS 17. Repeatedly the committee and some openness have said that the IBC does not require nor does it intend for occupancies to be separated from lot lines even though the IBC wants one building to protect a neighboring building from itself. One committee member that voted for disapproval expressed a concern that this code change forces the construction of an exterior wall which would reduce safety for occupants. The proposed code change addresses fire exposure to neighboring properties and the

IBC adequately addresses hazards to the occupants in the exposing building. The absence of an exterior wall should not be an absence of fire separation requirements when an occupancy is close to a lot line.

Additionally the definition approved in FS 11 can be read to consider the second story a projection when it is larger than the first story since it's floor projects beyond the recessed exterior wall on the first story.

This public comment is a fallback in the event that the public comment submitted in FS 16 is not approved. If FS 16 is approved it makes this code change moot unless the membership is interested in an option to address specific uses.

FS18-15

FS20-15
705.8.5

Proposed Change as Submitted

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

2015 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 $^{3}/_{4}$ 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 E 119 or UL 263 shall not apply to the flame barriers ~~or vertical separation~~ 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.

Reason: The existing provision indicates that openings in exterior walls 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. However, the last sentence of 705.8.5 then waives the unexposed surface temperature limitations specified in ASTM E 119 or UL 263. While this may be reasonable for the flame barriers because they extend horizontally beyond the build face, it is not justified for spandrel panels, exterior walls, or other similar assemblies that are mounted vertically above openings in the fire compartment.That vertical portion of the curtain wall is often immediately adjacent to cumbustible materials such as window coverings, drapes and carpets.

Our understanding of exterior fires and their mechanism of spread in buildings has been researched and reported. Building geometry and exterior projections of the curtain wall or building structural elements can have a beneficial or negative effect on flame length extension and heat flux exposure to curtain wall elements above the fire compartment. Such condition can allow the unrestricted passage of flames and hot gases from a fire on a floor below into the floor above. The position and geometry of the opening relative to the expected flame extension is important in assessing the risk of a leap frog event. The requirement to provide a fire-resistance-rating should not be waived for the vertical separation between openings.

Fire spread in high rise buildings from floor to floor occurs if flames emerge and extend on the façade of the building to cause ignition in the floor above fire floor. Even though considerable effort has been exerted to address this issue, the relevant physics is still under study and has been poorly clarified. Key factors that impact a curtain wall's fire performance are being addressed by the new Draft ASTM Test Method for Determining the Fire Resistance of Building Perimeter Containment Systems Due to External Spread of Fire. Such a test Standard could eventually be useful to provide enhanced protection or evaluate a curtain wall assembly's potential performance when subject to uncontrolled heat/flame exposure.

Cost Impact: Will increase the cost of construction
The current Code text is contradictory. It requires an ASTM E119 or UL 723 fire resistance rating from both sides, but then waives one of the most critical aspects. This proposals creates the intended level of safety. There may be some impact on cost where spandrel panels do not meet the existing ASTM E119 temperature rise conditions. In many cases, where one or more layers of gypsum board is used on the interior surface, there may be no additional cost depending on the type of spandrel construction.

FS20-15 : 705.8.5-CRIMI4307

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee agreed that allowing temperature rise limitations to not apply to vertical separations as this is a different fire exposure condition than the flame barriers that project beyond the exterior wall. The concern is that the fire will be directly against the exterior wall, which would make temperature rise on the unexposed surface more critical. Although a test standard is under development to address the fire exposure of this condition, the committee believes that this change should be made now to address the temperature rise concern.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

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

Commenter's Reason: This code change is premature. The proponent even states that there is a draft standard being developed:
Until that document is complete we are preemptively creating our own standard that industry and designers don't have and are not able to incproprate into their designs and code officials will struggle to obtain the appropriate information to determine what is appropriate. With a complete standard the codes and the construction industry can effectively engage an appropriate solution to the perceived problem that this code change purports to address.

We have struggled in the past with incorporation of criteria that are developed to favor products by those that gain from these standards to the detrement of others. The codes shouldn't act on the direction a standard is taking until the standard is complete.

FS22-15
705.8.6

Proposed Change as Submitted

Proponent : Gary Lampella (gary.lampella@ci.redmond.or.us)

2015 International Building Code

Delete without substitution:

~~**705.8.6 Vertical exposure.** For buildings on the same lot, opening protectives having a *fire protection rating* of not less than $^3/_4$ hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the *fire separation distance* between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm).~~

~~**Exceptions:**~~

1. ~~Opening protectives are not required where the roof assembly of the adjacent building or structure has a *fire-resistance rating* of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the *exterior wall* facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a *fire-resistance rating* of not less than 1 hour.~~
2. ~~Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with Section 705.8.6.~~

Reason: When applying this section to buildings on the same lot with an imaginary line designed to determine fire separation distance, it adds additional requirements that are not required in an identical situation with a real property line between buildings and with the same identical physical arrangement. It makes absolutely no sense to apply different and more stringent requirements to two identical scenarios. Both scenarios, an imaginary line and a real property line, have identical requirements of Table 602 for fire resistance based on fire separation distance, Table 705.2 for projections, Section 705.5 for exterior walls based on fire separation distance, Section 705.8 for exterior wall openings, Section 705.8.4 for mixed openings and Table 705.8 for exterior wall openings based on fire separation distance. Then we arrive at Section 705.8.6, for vertical exposure. This is the section that creates the conflict between imaginary lines and real property lines.

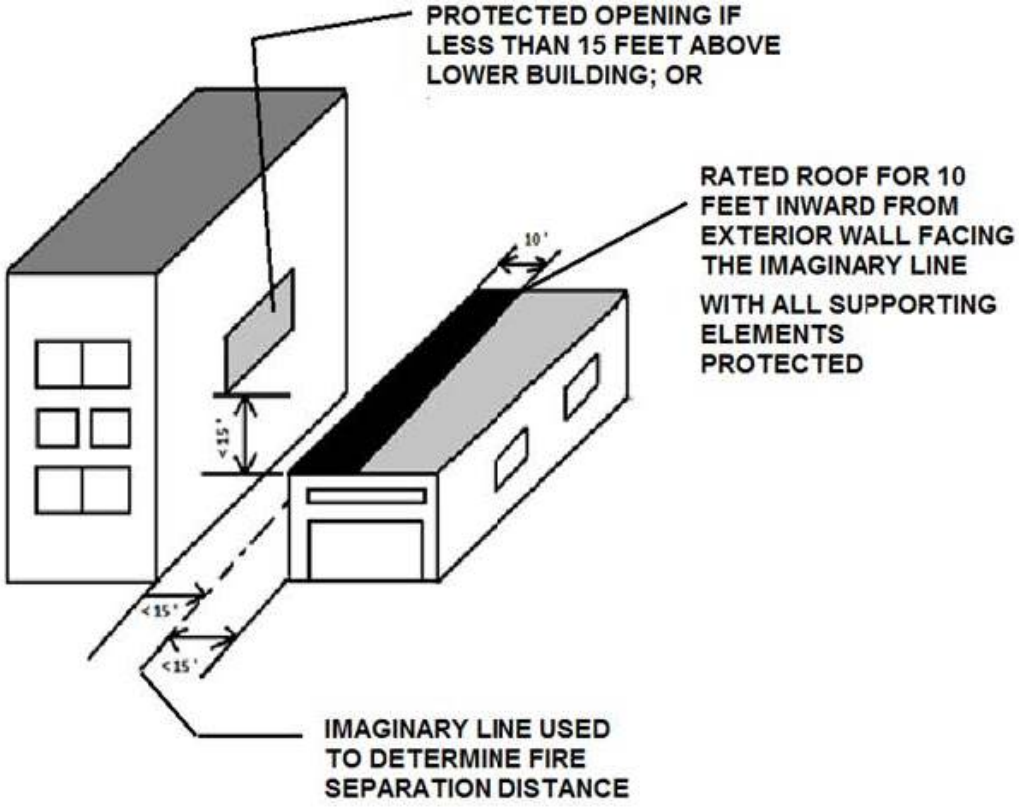


FIGURE 1

Section 705.8.6 currently requires either opening protectives or a rated roof only when you have two buildings on the same lot with an imaginary line between them. This is based on the ICC interpretation of this provision in the 2012 IBC.

Two additional and very substantial requirements are placed on two buildings on the same lot with an imaginary line to determine fire separation distance that are not applied to identical physical arrangements with real property lines. The code as written only addresses the fire separation distance of the lower building and has no verbiage for the building with the openings. Although there is an ICC interpretation

propriate for both fire-resistance-rated and nonfire-resistance-rated walls.

705.8.6 **Vertical exposure.** For buildings on the same lot, opening protectives having a *fire protection rating* of not less than ¾ hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the *fire separation distance* between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm).

Exceptions:

1. Opening protectives are not required where the roof assembly of the adjacent building or structure has a *fire-resistance rating* of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the *exterior wall* facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a *fire-resistance rating* of not less than 1 hour.
2. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with Section 705.8.6.

Q: A covered mall building constructed in accordance with Section 402 is attached to a multistory anchor store. Is it the intent of Section 705.8.6 to require exterior opening protectives for the windows in the anchor store that are adjacent to and located above the roof of the covered mall building?

A: No. Although the anchor store is not considered part of the covered mall building, it is the intent of Section 402.4.2.2.1 to permit unprotected openings between the anchor store and the pedestrian area of the mall. It would be inconsistent to allow unprotected openings between the mall area and the anchor store and, at the same time, require exterior opening protectives in windows located in the anchor store above the roof of the covered mall building.

Q: Where Table 705.8 prohibits any openings in an exterior wall due to fire separation distance, is it the intent of Section 705.8.6 to permit openings in the exterior wall that is located above the roof of an adjacent building?

A: No. Section 705.8 regulates the maximum area of openings (protected and unprotected) in exterior walls. These limitations are applicable to each and every story of all exterior walls. The conditions addressed in Section 705.8.6 are also subject to the requirements of Section 705.8. Thus, the exterior wall of a building is required to comply with Section 705.8 for determining the maximum amount of openings permitted whether or not there is an adjoining building or adjacent structure with a lower roof height. Note b to Table 705.8 provides the cross-reference to Section 706.6.1 for exterior opening requirements above fire walls.

Q: When evaluating the opening protective requirements of Section 705.8.6, must the fire separation distances of both buildings be considered?

A: Yes. The hazard addressed in Section 705.8.6 is due to the fire exposure from an adjacent lower roof which is in close proximity to the exterior wall of the higher building. The requirements of this section are based on a 15-foot fire separation distance as defined in Section 702, whereas the requirements of previous editions of model codes were based on a 30-foot horizontal distance between adjacent buildings. The current requirements presume that the imaginary line or lot line is drawn equidistant between two adjacent buildings located no more than 30 feet apart.

The provisions of Section 705.8.6 are intended to be applied where the adjacent exterior walls of both buildings are required by Table 602 to be fire-resistance rated. This typically occurs where both buildings have a fire separation distance of 15 feet or less. The hazard addressed in Section 705.8.6 does not exist where one building is located at a fire separation distance of 15 feet or less and the adjoining building or adjacent structure is located at a fire separation distance of greater than 15 feet.

SECTION 706
FIRE WALLS

706.2 **Structural stability.** Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required *fire-resistance rating* or shall be constructed as double fire walls in accordance with NFPA 221.

Q: Are building elements, such as plumbing piping, HVAC ducts and fire sprinkler piping, that are permitted to penetrate a fire wall required to be designed for compliance with the provisions of Section 706.2 for structural stability?

A: Yes. A fire wall must remain wholly intact for the time duration specified. Building elements that are permitted to penetrate a fire wall must be designed and installed such that failure of any building element on either side of a fire wall will not cause premature failure of the fire wall, neither in its entirety or in part.

Q: Can a fire-resistance-rated floor/ceiling assembly be classified as a horizontal fire wall for the purpose of subdividing a multistory structure into separate buildings?

EXIBIT 1

The ICC interpretation determined that both buildings had to have a fire separation distance that required both buildings to have fire resistive walls due to fire separation distance. Although a published interpretation, the code still does not say that. It only addresses the fire separation of the lower building.

that "the current requirements presume that the imaginary line is equidistant between the two buildings" the code does not say that. It only refers to the adjacent (shorter building) having a fire separation distance if less then 15 feet. It also says "the provsisions of Section 705.8.6 are intended to be applied where the adjacent exterior walls of both buildings are required by Table 602 to be fire-resistive rated." Again, the code does not say that it only applies if the lower building has a fire separation distance of less than 15 feet. One could have an existing building that had up to 75% of openings in the exterior wall,

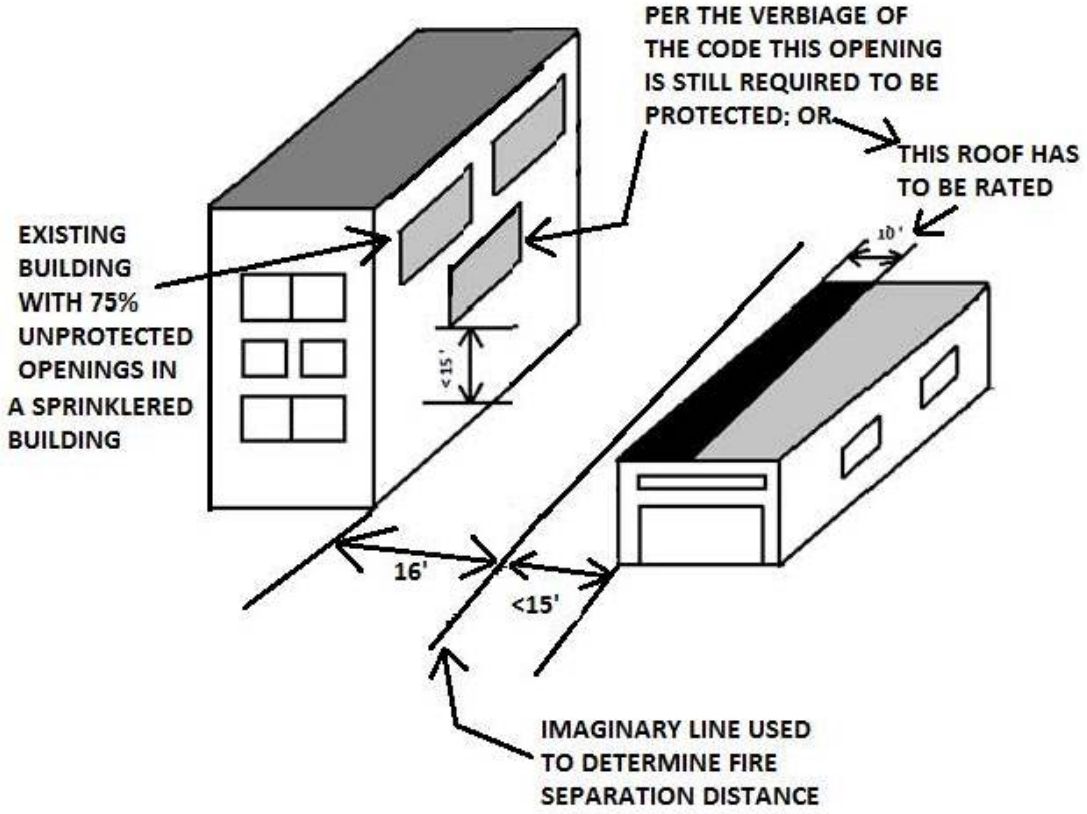


FIGURE 2

This imaginary line is placed such that the existing building can still have the 75% unprotected openings and not have to replace any glazing. Fifteen to less than 20 feet allows 75% of unprotected openings in a sprinklered building per Table 705.8.

The way the code reads in the last sentence of 705.8.6 only the shorter building has to have less than 15 feet to the imaginary line. So there is no code verbiage that regulates the fire separation distance of the taller building with the openings. Thus, the openings within 15 feet of the lower roof would still have to be protected although the building with the opening has a fire separation distance of more than 15 feet.

and another building was proposed to be constructed on the same lot 30 feet from it, one could place the imaginary line so the proposed building had a 14 foot fire separation distance and the taller one with the openings had a 16 foot fire sepration distance the openings could reamain unprotected in a non sprinklered building. But because of the code language, any opening that was less than 15 feet vertically above the adjacent roof would still be required to be protected because of the provision of measuring the fire separation distance for the lower building. Infact, you could have a much larger fire separation distance for the taller building but if the lower one was less than 15 feeet, you would still have to protect to openings within the 15 foot range due to the absence of any fire separation distance for the building with the openings. Replacing the imaginary line with an actual property line,

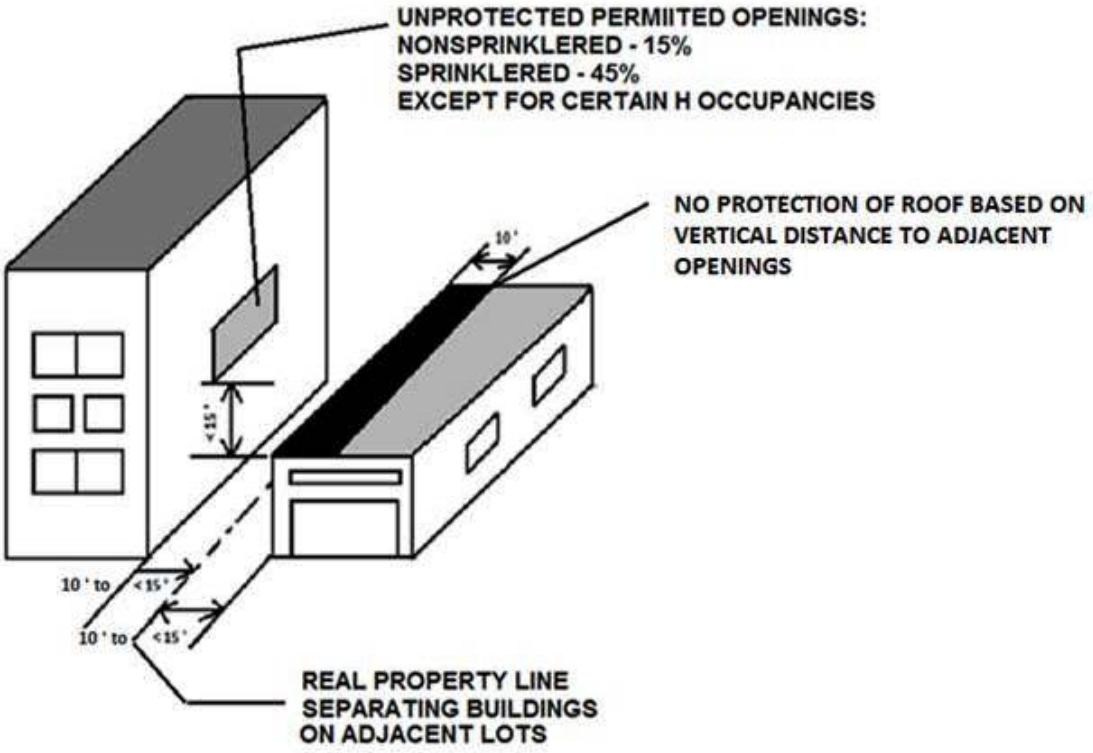


FIGURE 3

Now applying the same exact scenario to buildings with a real property line and you get virtually no requirements from Section 705.8.6 that are applicable to two buildings on the same lot with an imaginary line. You now can have a number of openings within the 15 foot vertical measurement without having to protect them or protecting the roof.

This is utilizing the 10 feet to < 15 feet in Table 705.8 as illustrating the difference in requirements between imaginary lnes and real property lines.

the buildings are now not subjected to the requirements of 705.8.6. With the two buildings with a real property line scenario you could have up to 15% of unprotected openings in a non sprinklered building and up to 45% in a sprinklered building without having to rate any of the openings in relation to the height above an adjacent roof. Furthermore, two adjacent building, each with a 5 to less than 10 foot fire separation distance to a real property line configured exactly like Figures 1 and 3 could have a wall with 10% unprotected openings without sprinklers and 25% unprotected openings when provided with sprinklers. We cannot find a similar provisions such as this anywhere in the code that regulates this type of arrangement. It is only applied when you have two buildings on the same lot with an imaginary line.

Statements from the Fire Safety committee in previous code hearings on this section were that you couldn't compare the two scenarios simply because with a property line you would have different owners and the buildings would not be constructed at the same time and how could you make two owners agree on which one does what, or how could you make an owner of an existing building retroactively modify a once code conforming building? I contend that you can relate them quite simply. If an existing building has less than a 15 foot fire separation distance to a property line, and another building is proposed on an adjacent lot with less than a 15 foot fire separation distance to the same property line, and there were one or more openings in one of the buildings that were less than 15 feet above the roof of the other building then Section 705.8.6 could be theoretically applied. The newer proposed building would have to have either a fire-rated roof or protected openings dependent

upon whether it was the higher building or the lower building.

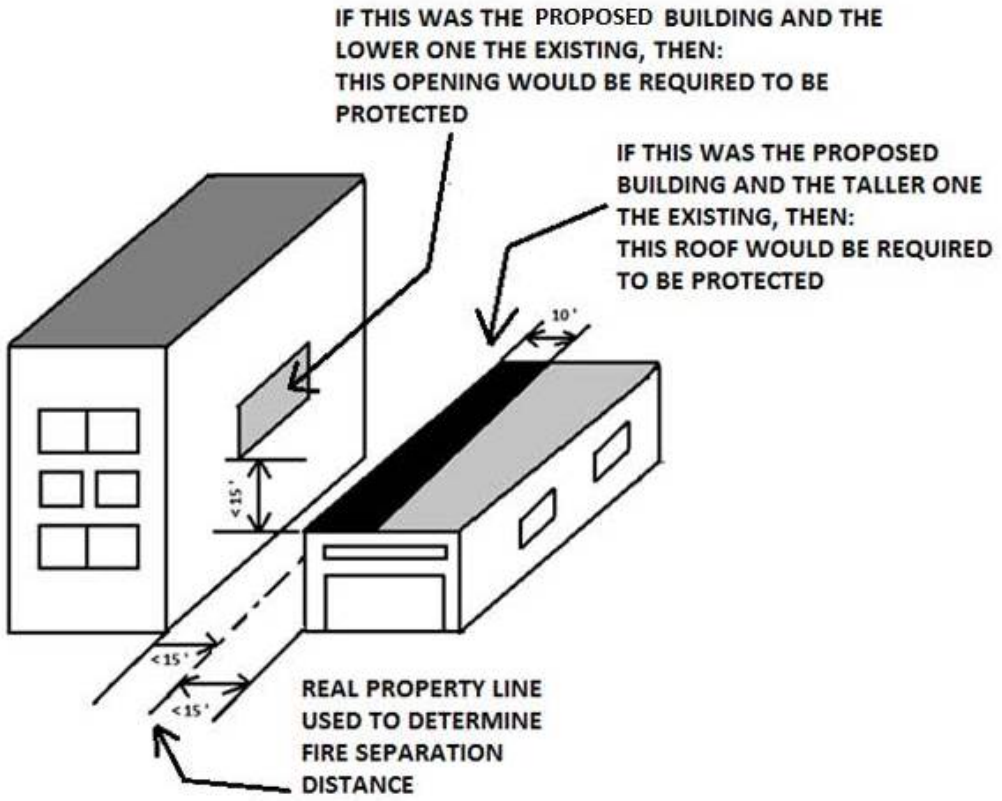


FIGURE 4

If a building was proposed to be constructed adjacent to another building on an adjacent lot, and the configuration of the two building met the provisions of Section 705.8.6, then you would apply the appropriate provision to the proposed building.

This puts no financial burden or threat of upgrading the existing building on the owner of that building. The newer building owner would be responsible to comply with 705.8.6. Of course this is merely conjecture and the code does not currently require that. But it is the exact same configuration and scenario Section 705.8.6 is addressing and is simply a way to show that you can compare the two scenarios – one with an imaginary line and one with a real property line.

So after analysis of situations with imaginary lines and real property lines, we can only presume that an imaginary line drastically changes physics and fire science to a degree that causes fire and smoke to behave very badly and function outside the realm of science – creating a hazard more severe than normal hazards associated with other structures located 30 feet from each other with a real property line between them.

Or maybe the surveying and platting of a legal and real property line also causes fire and smoke to work outside the physical realm of science and physics much like a black hole. Sucking oxygen, friction and fuel out of this magical 30 foot strip of soil and air, eradicating every known hazard and sending it millions of light years away for some unsuspecting unknown life form in a distance galaxy to deal with this very unpleasant array of toxic and harmful conditions created by an imaginary line.

It defies logic that fire and smoke would react differently with identical building locations, building shapes, and roof and opening locations due to having and imaginary line or a real property line. So why do we have different requirements for each?

If we want predictive and consistent codes, than this code section needs to be eliminated.

Cost Impact: Will not increase the cost of construction
This will not incerase to cost if approved. It is a deletion of a section that will no longer require fire-resistive assemblies.

FS22-15 : 705.8.6-LAMPELLA3376

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that removing these provisions would create less stringent requirements. Further, to address the differences in requirements between buildings on the same lot and buildings on adjacent lots it appears that FS23-15 does a better job. Lastly, this section should remain in the code as it directly tells the code user that fire exposure between buildings on the same lot needs to be considered.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Gary Lampella, City of Redmond, OR, representing Oregon Building Officials Association (gary.lampella@ci.redmond.or.us) requests Approve as Submitted.

Commenter's Reason: This section is a hold over from a previous legacy code and was intended for use with existing building. Applying this section to new construction only for buildings with an imaginary line and not for buildings with a real property line has no rational reason for doing so. Whether you have an imaginary line or a a real proiperty line does not alter the physics of fire spread and smoke, as one would be led to believe. Constructing a new building same lot with with an existing building that results in each having less then 15 feet of fire separation distance to the imaginary line, or constructing a new building with less than 15 feet of fire separation distance from a real property line with a building on tha adjacent lot with less then 15 feet of fire separaration distance from the same line, should be treated exactly the same. But the code does not do that. It only requires 2 buildings on the same lot to have a more restrictive requirement than those on adjacent lots. Onbe can only surmise that a real prperty line creates some sort of invisible safety feature that buildings with an imaginary line do not have. Fire and smoke behave exactly the same way between 2 buildings equidistance apart irregardless of what type of line separates them - a real property line, or an imaginary line.

THis section creates an inconsistency in the code for buildings situated exactly the same way - fire separation distance of less than 15 feet and openings within 15 feet vertically above an adjacent roof. Only the buildings with the imaginary line are required to conform to the provision of the code. There is no other requirement anywhere we cvan find in the code that is remotely similar to this one. It makes absolutely no logical sense to treat two situations differently based on an imaginary line and a real property line.

FS22-15

FS23-15

705.8.6.1 (New)

Proposed Change as Submitted

Proponent : Gary Lampella, City of Redmond, Oregon (gary.lampella@ci.redmond.or.us)

2015 International Building Code

Add new text as follows:

705.8.6.1 **Vertical exposure for buildings on adjacent lots** Where a building is proposed adjacent to an existing building on an adjacent lot and the resulting fire separation distance for both buildings is less than 15 feet (4572 mm), and one of the buildings has openings less than 15 feet (4572 mm) above the roof of the adjacent building, one of the following provisions shall apply.

1. If the proposed building has openings less than 15 feet (4572 mm) vertically above the roof of the existing adjacent building, opening protectives having a fire protection rating of not less than 3/4 hour shall be provided for those openings; or

2. If the existing building has openings less than 15 feet vertically above the roof of the proposed adjacent building, the proposed building shall be provided with a roof assembly having a fire-resistive rating of not less than 1 hour for a distance of 10 feet (3048 mm) from the exterior face of the wall facing the property line and the entire length and span of the supporting elements for the fire-resistive-rated roof assembly shall have a fire-resistive-rating of not less than 1 hour.

Reason: The purpose of this proposal is to eliminate a conflict and align it with Section 705.8.6. Having a requirement for roof and opening protection for two buildings on the same lot with an imaginary line between them and ignoring the same exact scenario for two building on seprate lots is not logical. We can only assume that placing an imaginary line between two buildings on the same lot creates a more severe hazard than two buildings on separate lots separated by a real property line but with identical configurations. This seems to us that smoke and fire behave differently with an imaginary line than it does with a real property line. Either the imaginary line defies normal physics, fire science and behaves badly because of the imaginary line, or maybe a real property line contains some magical characteristic that removes all potential hazards and negates the need for fire-resistve protection that is required with an imaginary line. Fire and smoke behave the same between two buildings regardless if they have a real or imaginary line between them. It only changes by outside agencies such as wind, additional accelerants or by human intervension - which can happen with any building configuration. Having code provisions to control vertical fire spread for only buildings on the same lot with a fire separations distance of less than 15 feet for each building and ignoring the same exact scenario with a real property line perplexes us. I have submiitted different variations of this proposal before the Fire Safety Committee numerous times without sucess. Feedback from this committee in previous code cycles on this section were that you couldn't compare the two scenarios simply because with a property line you would most likely have separate owners and the buildings would not be constructed at the same time, how could you make separate owners agree on which one does what, or how could you make an owner of an existing building retroactively modify a once code conforming building? I

think we have addressed those concerns with this new section to clearly define the proposed building owner as the responsible party. This would be consistent with opening protection due to fire separation distance measured to a property line. If the fire separation distance of the two buildings results in both buildings having a fire separation distance of less the 15 feet by placement of the new building, and the proposed building meets either of the two provisions, openings in the wall facing the property line less than 15 feet above the existing building on the adjacent lot, or the roof of the proposed building is at an elevation that reults in existing openings in the existing building being less than 15 feet above the new roof, only the proposed building would be subject to the fire-resistive requirements. The existing building would not be required to be retrofitted or upgraded in any manner and could remain as is. See Figure 1.

If our goal is to have predictable and consistent codes that don't conflict, then this code proposal is needed and necessary to meet that goal.

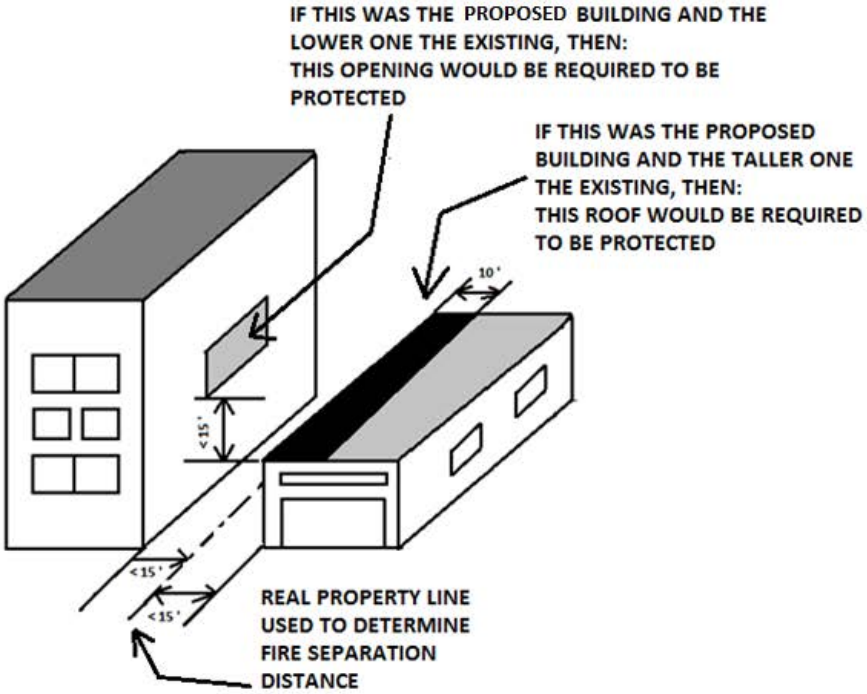


FIGURE 1

When the taller building is the proposed structure and the shorter the existing one, the opening depicted in the drawing would be required to have a fire-protection-rating of not less than ¾ hour. The existing lower building would require no fire-resistive construction for the roof.

When the shorter building is the proposed and the taller the existing building, then the roof would be required to be fire-resistive rated for 10 feet inward from the exterior wall and all supporting members rated. The taller existing building would be permitted to have unprotected openings.

Cost Impact: Will increase the cost of construction
The cost of costruction will increase only for projects that opt to construct buildings closer than 15 feet to a property line with another building on the adjacent lot also less than 15 feet from the propety line. We don't belive that this is common pratice so the cost in overall construction should be minimal

FS23-15 : 705.8.6.1 (New)-LAMPELLA3558

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that a new building should be designed in relation to the known lot lines without taking into account a building or structure on an adjacent lot, the conditions of which could change over time. Also, openings in the existing building may already be protected; this should be addressed in item #2. Further, enforceability could be difficult when dealing with a property, structure or property owner on a lot that is adjacent to the lot on which the new structure is permitted. Lastly, Section 705.8 should be referenced as some situations may require openings to be protected for more than ¾ hours.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Robert Davidson, Davidson Code Concepts, LLC, representing Self (rjd@davidsoncodeconcepts.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

705.8.6.1 Vertical exposure for buildings on adjacent lots Where a building is proposed adjacent to an existing building on an adjacent lot and the resulting fire separation distance for both buildings is less than 15 feet (4572 mm), and one of the buildings has openings less than 15 feet (4572 mm) above the roof of the adjacent building, one of the following provisions shall apply.

1. If the proposed building has openings less than 15 feet (4572 mm) vertically above the roof of the existing adjacent building, opening protectives having a fire protection rating of not less than 3/4 hour, or the fire protection rating required by Section 705.8 if greater, shall be provided for those openings; or

2. If the existing building has unprotected openings less than 15 feet vertically above the roof of the proposed adjacent building, the proposed building shall be provided with a roof assembly having a fire-resistive rating of not less than 1 hour for a distance of 10 feet (3048 mm) from the exterior face of the wall facing the property line and the entire length and span of the supporting elements for the fire-resistive-rated roof assembly shall have a fire-resistive-rating of not less than 1 hour.

Commenter's Reason: The committee heard related testimony on FS21-15, FS22-15 and FS23-15. The three proposals are related because they address the same fire protection issue, i.e., fire exposure to buildings of differing heights. The purpose of this proposal is to eliminate a conflict and align it with Section 705.8.6. Having a requirement for roof and opening protection for two buildings on the same lot with an imaginary line between them and ignoring the same exact scenario for two building on separate lots is not logical. The fire exposure hazard is the same.

During the discussion on FS22-15 the committee indicated that FS23-15 does a better job of addressing the anomaly. In their discussion of FS23-15 the committee felt that a new building should be designed in relation to the known lot lines without

taking into account a building or structure on an adjacent lot, the conditions of which could change over time. This would be correct when there is no existing building on the neighboring lot. You would simply apply the exterior wall fire protection requirements based upon Section 705. But in many cases there are existing buildings built under differing codes, with and withoutout existing openings, protected and unprotected. This proposal addresses those situations where you will have buildings of differing heights in the same manner as existing Section 705.8.6 which deals with two buildings on the same lot. It is not uncommon to see buildings with differing heights built directly up against a lot line in an urban environment.

The committee commented that, openings in the existing building may already be protected; this should be addressed in item #2. A modification has been added to recognize that the openings may already be protected.

The committee was concerned that enforceability could be difficult when dealing with a property, structure or property owner on a lot that is adjacent to the lot on which the new structure is permitted. This was dealing with knowledge of whether or not the existing building had protected openings. Either existing records can be reviewed or the existing building can be surveyed to check on the existing construction. This should not be an issue with a jurisidiction with viable construction and maintenance inspection programs. The information should already exist in the files. However, since the proposed fire protection provisions target the new building to be constructed, the default would be to assume the existing building openings are unprotected and construct accordingly.

Lastly, the committee indicated that Section 705.8 should be referenced as some situations may require openings to be protected for more than ¾ hours. A reference to Section 705.8 has been added for application if the opening protection requirements of Section 705.8 are higher than 3/4 hours.

FS23-15

FS26-15
705.11.1

Proposed Change as Submitted

Proponent : Galen Taylor, County of Los Angeles Fire Department, representing self (galentaylor@me.com)

2015 International Building Code

Revise as follows:

705.11.1 Parapet construction. Parapets shall have the same *fire-resistance rating* as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials. The height of the parapet shall be not less than 30 inches (762 mm) and not more than 48 inches (1219 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a *fire separation distance* where protection of wall openings is required, ~~but~~ in no case shall the height of the parapet be less than 30 inches (762 mm).

> **Exception:** Parapets shall not be limited to 48 inches (1219 mm) in height where approved by the fire ode official.

Reason: Firefighting operations typically require accessing the roof, from the exterior, to perform critical ventilation operations. Firefighters performing such operations may also need to rapidly retreat from their roof-top positions. Excessively high parapets present an immovable obstacle to firefighters when sudden changes in roof-top firefighting operations require an immediate evacuation. Excessively high parapets also prevent firefighters from shouting or signally for help should their hand-held radio stop working.
This proponent has seen building projects involving parapets up to nine feet high on all four sides. Planning Departments also are prone to imposing view-screen requirements at the edge of building roofs which present an equivalent barrier to roof-top access and egress. With the advent of roof-top gardens, the use of parapets as a screening tool will likely increase. However, since the building code is silent regarding maximum parapet heights, jurisdictional authorities are hard pressed to impose a maximum height limit. This proposal would impose a limit on parapets heights while still allowing a reasonable degree of flexability on a case by case basis.

Cost Impact: Will not increase the cost of construction
Since no additional construction materials are involved in limiting maximum parapet height there should be no additional costs imposed by this code amendment.

FS26-15 : 705.11.1-TAYLOR5108

Public Hearing Results

Committee Action: Approved as Modified

Modification:

705.11.1 Parapet construction. Parapets shall have the same fire-resistance rating as that required for the supporting wall,
and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including
counterflashing and coping materials. The height of the parapet shall be not less than 30 inches (762 mm) and not more than
48 inches (1219 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at
a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height
as any portion of the roof within a fire separation distance where protection of wall openings is required, but in no case shall
the height of the parapet be less than 30 inches (762 mm).

> **Exception:** Parapets shall not be limited to 48 inches (1219 mm) in height where approved by the ~~fire~~ code official.

Committee Reason: The committee agreed that a limitation on parapet heights was appropriate to facilitate firefighting operations. The modification clarifies that the code official can approve a higher parapet as this is purely a building issue.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Adria Reinertson, representing California Fire Chiefs Association (adriar@moval.org) requests Approve as Submitted.

Commenter's Reason: This proposal was approved by the committee as modified citing their agreement that a limitation on parapet heights was appropriate to facilitate firefighting operations. The committee then modified the proposal to remove the word fire changing the authority from the "fire code official" to the "code official" stating that this is purely a building issue. Fire Code Officials utilize and enforce the building code on a regular basis. This change flies in the face of the intent, to facilitate firefighting operations and protect our firefighters. The authority to allow higher parapets should belong to the fire code official, who has intimate knowledge of firefighting operations within their repective jurisdiction, and has the ability to evaluate the department's needs and make an informed decision on whether to allow a higher parapet.

Public Comment 2:

Proponent : Adolf Zubia, representing International Association of Fire Chiefs, Fire & Life Safety Section requests Approve as Submitted.

Commenter's Reason: The appropriate approving authority for parapet height is the fire code official.
The reason for limiting the parapet height has to do with firefighting operations on the roof. Typical firefighting operation consists of placing ladders to gain access to the rooftop. Firefighters do not carry ladders across the rooftop normally. When a parapet is of such height that the firefighters cannot get over it, the other side of the roof is inaccessible.

Rooftop firefighting operations are inherently dangerous with a fire below. Adding obstacles and insurmountable parapets exacerbates the situation. When a rooftop is starting to fail and the firefighters on the roof need to escape, tall parapets limit their escape routes.

Since the limitation on the parapet height is because of firefighting operations, it is appropriate for the fire code official to make the determination as to whether the 48" height can be exceeded.

Public Comment 3:

Proponent : Andrew Greer, representing g Colorado Chapter, International Code Council requests Disapprove.

Commenter's Reason: The code is supposed to be a minimum requirement; many jurisdictions across the country have zoning codes which require screening of rooftop equipment. Limiting the height of parapets eliminates design options to building owners and design professionals that otherwise would be available. This issue would come up all the time leaving the code official responsible for making the decision as whether it's appropriate or not. There are also other ways to design rooftops which could potentially create the same types of issues brought up in the proponent's reason statement that would not be addressed by this code change; also there are many fire departments which have policies that would prohibit accessing rooftops during an event. The requirement of parapet heights should be based on a risk assessment profile that balances the variables mentioned plus staffing levels, response times, apparatus types etc. This is a decision that needs to be made at a local level where they have an understanding of their risk profile, not by a one size fits all national mandate.

Public Comment 4:

Proponent : Barry Greive, Target Corporation, representing Target Corporation requests Disapprove.

Commenter's Reason: This proposal is not needed, there are many instances where a parapet needs to be higher than 48 inches.
The cost impact is falsely claimed to have no increase in the cost of construction. By not having the ability to raise even one side of a buildings parapet or portion of a buildings parapet can increase the cost of construction on a building by more than $60,000. Many jurisdictions require screening of rooftop equipment, having to screen them seperately is a hardship. This also decreases the archetectural design features availible.

This also doesn't address all types of roof types, if there is a mansard type roof with a well for the mechanical equipment, which is a common type of construction the same scenario exists with a higher parapet but thay situation is not addressed.

limiting the height of parapets is not a one size fits all solution and should be disaproved.

Public Comment 5:

Proponent : Jonathan Siu, representing City of Seattle Department of Planning & Developoment (jon.siu@seattle.gov) requests Disapprove.

Commenter's Reason: We believe the proposal does not add clarity, would be inconsistently applied, and conflicts with another section of the code as explained below, and therefore should be disapproved.

1. The requirement applies to all portions of the building. Many years ago, there was a popular trend where architects were designing parapets that mimicked gable ends of buildings, but were only on a portion of the front facade of the building. This proposed code change would limit those types of architectural features that would interfere with access/escape from only a portion of the roof perimeter.
2. Some years after the false gable trend, there was a trend toward providing false mansard roofs, with triangular trusses around the perimeter of the roof deck. The apices of the trusses extended above the roof deck, creating a well. This situation, while creating the same issues for access and escape, would not be covered by the proposed change.
3. While it is probably intended to address issues such as the false gables mentioned above, the exception is too vague. There are no criteria by which to judge whether the parapet height requirement can be waived, so result is likely to be either it will used so broadly as to render the original requirement useless, or it will be applied so strictly as to render the exception meaningless. Another possibility is that its application will be totally arbitrary, and designers will have no idea what to expect. No matter what, there will be an extreme lack of consistent interpretation and application of the requirement from jurisdiction to jurisdiction, and possibly even within a jurisdiction.
4. The proponent expresses concern that increased use of roof gardens will increase the use of tall parapets. We disagree that this will be the case--users of the roof gardens will want to be able to enjoy the views from the rooftops, and they are more likely to want lower barriers to the sight lines than higher.
5. The 48-inch limitation could conflict with Section 705.11.1, particulary if a building has a roof that with a steep slope, and the exterior wall is near the property line. That section requires a parapet to "extend to the same height as any portion of the

roof within a fire separation distance where protection of openings is required."
6. The proposal will lead to inconsistent application, as it does not distinguish parapets from equipment screens, wind screens, or guards--all of which could be greater than 48 inches.

FS26-15

FS27-15

706.1.1.1 (New)

Proposed Change as Submitted

Proponent : Adolf Zubia, representing Fire Code Action Committee (fcac@iccsafe.org)

2015 International Building Code

Add new text as follows:

706.1.1.1 Fire walls not required Fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. The code official shall be provided with copies of dedicated access easements and contractual agreements that permit the owner of the portion of the building located on either side of the lot line access to the other side for purposes of maintaining fire and life safety systems necessary for the operation of the building.

Reason: This proposal is submitted by the ICC Fire Code Action Committee (FCAC). This ICC committee was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the Fire-CAC has held 10 open meetings and numerous Regional Work Group and Task Group meetings and conference calls which included members of the committees as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the FAC website at:
http://www.iccsafe.org/cs/CAC/Pages/default.aspx?usertoken={token}&Site=icc
Currently the only requirement for constructing a fire wall within the IBC is when a building exceeds the maximum height and area requirements of the code. This is reflected in Section 503.1 of the IBC and the user is pointed to Section 706 for the technical requirements applying to fire walls. At Section 706.1.1 the language states that if a wall is constructed on a lot line with the wall intended for use between two buildings it must be constructed as a fire wall. Two key issues are that the construction of a party wall is not mandated based upon the existence of a lot line; and, often a wall is built adjacent to a lot line, not on it, making this section moot in most cases.

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. this issue is addressed in Chapter 4 for malls where anchor stores have lot lines specific to the anchor store established for financial purposes along the wall that separates the mall from the anchor store. But this issue is not addressed for other types of buildings and as a result, designers, building owners and code officials are left to wrestle with the issue on a case by case basis.

The proposed language specifies that where a property line divides a building for ownership purposes, and the building portions on both sides of the line do not exceed the maximum height and area requirements of the code, a fire wall is not required to be constructed on the property line. This allowance is only permitted where copies of dedicated access easements and contractual agreements allowing for maintenance of required fire and life safety systems that straddle the separation wall be provided to the code official. This new section is intended to provide guidance to ensure consistency in application of the code to buildings divided by ownership lot lines.

Cost Impact: Will not increase the cost of construction
There will be a decrease in cost by providing for a systematic method of handling buildings that have a lot line bisecting them for ownership purposes, eliminating unnecessary alternative method applications, appeal processes and/or construction of walls not necessary for fire or life safety.

FS27-15 : 706.1.1.1 (New)-ZUBIA4764

Public Hearing Results

Committee Action: Approved as Modified

Modification:

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

Exceptions:

1. Openings in a party wall separating an anchor building and a mall shall be in accordance with Section 402.4.2.2.1.

2. Fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. The code official shall be provided with copies of dedicated access easements and contractual agreements that permit the owner of the portion of the building located on either side of the lot line access to the other side for purposes of maintaining fire and life safety systems necessary for the operation of the building for review and approval.

~~**706.1.1.1 Fire walls not required.** Fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. The code official shall be provided with copies of dedicated access easements and contractual agreements that permit the owner of the portion of the building located on either side of the lot line access to the other side for purposes~~

~~of maintaining fire and life safety systems necessary for the operation of the building.~~

Committee Reason: The committee agreed that with the modifications this proposal would give the code official and designer the necessary minimum requirements to deal with the issue of having property subdivided with a lot line dividing a building for ownership purposes. Contractural agreements between building owners are appropriate documentation to be submitted to the code official for review, approval and bulidng department records. The modification appropriately places these requirements in the exceptions and requires the code official to reivew and approve the documentation.

Assembly Motion: **Disapprove**
Online Vote Results: **Successful**
Support: 54.04% (214) Oppose: 45.96% (182)
Assembly Action : **Disapproved**

Individual Consideration Agenda

Public Comment 1:

Proponent : Barry Greive, representing Target Corporation (barry.greive@target.com) requests Approve as Modified by Committee.

Commenter's Reason: The Fire CAC and the committee got this one right, there is no safety hazard with having the property line when the building can already be constructed of a larger size. Following the allowable area sizes in the code is an adequate safety factor. Having buildings cross property lines in certain circumstances is a common practice and widely accepted already. Adding this language to the code is a good clarification to the code user and AHJ.

Public Comment 2:

Proponent : Amy Murdock, Code Consultants, Inc., representing Code Consultants, Incorporated (amym@codeconsultants.com) requests Approve as Modified by Committee.

Commenter's Reason: This public comment provides full support of Code Change F-27 as approved by the Committee.
The proposed text addresses an issue that is a constant battle in the mixed use industry and the shopping center industry. The code text over the years has slowly began to address this matter and providing this clear statement allows for clarity in the matter of "internal" lot lines established for the purpose of realestate ownership, responsibility, and tax reasonings.

In the 2015 IBC, the exception to Section 706.1.1, already recognizes openings in a party wall separating an anchor building and a mall. Therefore, the code already addresses the allowance of a property line between an anchor building and a mall building within a covered/open mall building. The IBC Commentary text to this excpetion states:

"The exception to allow openings is important since many anchor stores are actually owned by the major department store, while the mall is owned by a separate entity. The fact that there is a real property line at the separation walls between an anchor and a mall means that technically ther eis a party wall, but openings are normally

present and a necessary function of the mall and anchor store."

This code exception was approved by the Commitee in Code Change FS-22-07/08, Part I-IBC Fire Safety. The Committee Reason stated: "The committee agreed that based on the unique situation regarding ownership of anchor buildings in typical malls this exception was appropriate to include. Further, the modification appropriately clarifies that the separation requirements are intended to address the pedestrian way within the mall building."

Further to this, the IBC Commentary text to Section 402.7.3 states:

"A growing trend in the development of covered mall and anchor buildings is the desire of the operators of the businesses in the anchor buidling to own the property and the buidling of the anchor building. The orignial intent of the covered mall provisions was that this would apply to one property under the control of one owner. Therefore, the complex simply becomes a group of separate buidlings, which eliminates the application of these provisions to the complex. Application of these mall provisions to a situation where the mall and anchor buildings are separate properties would be problematic, requiring special legal and technical considerations and treatement by the authority having jurisdiction."

The proposed code change FS-27 provides clarity to the covered mall conditions and alleviates the discussions pertaining to such property lines with each individual jurisdiction around the country.

The proposed code change F-27 addresses "internal" property lines within all developments. Mixed-use developments are more and more common which have very similar conditions to that of mall and anchor buildings. Unfortunately, condominium agreements are not as common as they used to be. For this reason, Code Change F-27 is important to continue as Approved by the Committee.

Bibliography: 2015 IBC; International Code Council; 2015; Page 124
2012 IBC Code and Commentary Volume 1; International Code Council; 2012; Section 706.1.1

2007/2008 IBC code change documentation

Public Comment 3:

Proponent : Assembly Action requests Disapprove.

Commenter's Reason: This code change proposal is on the agenda for individual consideration because the proposal received a successful assembly action. The assembly action for Disapprove was successful by a vote of 54.04% (214) to 45.96% (182) by eligible members online during the period of May 14 - May 28, 2015.

Public Comment 4:

Proponent : Stephen Skalko, Stephen V. Skalko, P.E. & Associates, LLC, representing Masonry Alliance for Codes and Standards requests Disapprove.

Commenter's Reason: This code change is fatally flawed and can significantly reduce the fire safety objective of the building code to minimize the spread of fire between two buildings on separately owned properties. The following summarizes some of the issues in the proposal:

1. The proposed code language gives no guidance whatsoever on the specific details that the code official should look for in the dedicated access easement and contractual agreements other than permitting each owner access on the other's property for "*maintaining fire and life safety systems necessary for the operation of the building for review and approval*". Is this access permitted to be limited to certain times of day? Do the agreements insure access to all parts of the other owner's building space. For example, if the building is fully sprinklered, will each owner be able inspect all parts of the other owners building space to verify sprinkler heads are not blocked or have been removed. Or is access permitted to be limited to specific parts of the building like the location of the sprinkler system riser?

2. Which fire and life safety systems do the agreements apply to? The language says "*necessary for the operation of the building for review and approval*" Is it just sprinkler protection? Does it include a fire alarms system? What about means of egress systems.

3. What if the fire and life safety systems included with the initial permit approval are not maintained fully functional? Does the code official seek enforcement action jointly against the two owners, or just the owner whose side has the deficiencies? If the fire and life safety system deficiencies are serious and require the building(s) to be vacated should the contractual agreement have provisions specifying this action?

4. The proposal allows a party wall to jointly be used between two building owners without being constructed as a fire wall. What is the fire resistance rating of this wall required to be? Does the wall need meet the requirements for a single exterior wall at a property line with zero fire separation distance? Per Table 602 most occupancies would be required to have an exterior wall with a fire resistance rating of at least one (1) hour. Since there are two owners should the party wall have 2-hours of fire resistance, which is what would be required for separate exterior walls with zero fire separation distance? Or is a one hour fire resistance rating permitted for the party wall? If one hour is permitted then this is a reduction in the fire safety requirements of the code.

The questions raised above make clear there are many criteria and parameters that need to be considered if such a concept as dedicated access easements and contractual agreements are used to document approval of a permit for building projects such as these. It should not be codified within the IBC. These details will vary from project to project and need to be decided on a case by case basis. This approach needs to be left to the local authority having jurisdiction to decide all the pertinent requirements based on Section 104.11, Alternate Materials, Design and Methods of Construction.

Recommend DISAPPROVAL of FS 27-15.

FS27-15

FS28-15
706.2

Proposed Change as Submitted

Proponent : Edwin Huston, representing NCSEA Code Advisory Committee (huston@smithhustoninc.com)

2015 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: Modify NFPA 221, Section 4.2 to read as follows:

4.2 Design Loads. All walls and their support shall be designed for loads in accordance with IBC Chapter 16, and to withstand a minimum uniform load, Ak, of 8 lbs/ft2 (0.38 kPa) from either direction applied perpendicular to the face of the wall utilizing the load combinations for extraordinary events ASCE 7, Section 2.5.

Reason: The loading requirements for firewalls in NFPA 221 – 15 are based on Allowable Stress Design level loads. They need to be revised to coordinate with the current strength level loading of ASCE 7 and to clarify how to combine them with other loads. The 8 psf is the existing 5 psf load from 1607.14 multiplied by a load factor of 1.6 to increase it to a Strength Design load in accordance with ASCE 7 Section 2.5.

Cost Impact: Will not increase the cost of construction
This change clarifies the design loads for structural stability of the fire wall and does not add new requirements which would increase the cost of construction.

FS28-15 : 706.2-HUSTON5246

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that the proposed changes to the NFPA standard should be processed through the NFPA standards process. Further, it appears there will be a cost impact contrary to what the proponent indicated.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov); Jonathan Siu, City of Seattle Department of Planning & Development,

representing City of Seattle Department of Planning & Development (jon.siu@seattle.gov) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

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 and Section 1607.14.2 shall be deemed to comply with this section.

~~**Exception:** Modify NFPA 221, Section 4.2 to read as follows:~~

~~4.2 Design Loads. All walls and their support shall be designed for loads in accordance with IBC Chapter 16, and to withstand a minimum uniform load, Ak, of 8 lbs/ft2 (0.38 kPa) from either direction applied perpendicular to the face of the wall utilizing the load combinations for extraordinary events ASCE 7, Section 2.5.~~

1607.14.2 Fire Walls Fire walls and their supports shall be designed in accordance with this chapter. In addition, where fire walls are designed in accordance with NFPA 221, they shall be designed to withstand a minimum out-of-plane Allowable Stress Design load of 5 lbs/ft^2, applied from either direction. A minimum uniform Strength Design load, A_k, of 8 lbs/ft^2 (0.38 kPa), in conjunction with the load combinations for extraordinary events in ASCE 7, is permitted to be used for design.

Commenter's Reason: This is a necessary code change for consistency in the design of fire walls for structural loads.
This public comment modifies the original proposal first by moving the requirement into Chapter 16 (leaving a cross reference in Section 706.2), where the other structural loads are defined. The engineers who are going to be required to design these walls for structural loading will be unlikely to find the design criteria in Chapter 7--these engineers live in Chapters 16 through 23.

Second, the public comment clarifies that the 5 psf out-of-plane load (required in Section 4.2 of NFPA 221) is Allowable Stress loading. The second sentence in the new Section 1607.14.2 then gives guidance to the design engineer what to use for Strength Design loading (which is what the vast majority of the loads in the code are calibrated to) and what load combinations to use in ASCE 7. **This in no way conflicts with or changes the requirements in NFPA 221**--it is merely a conversion from one type of loading (Allowable Stress) to another (Strength Design), and brings consistency in application for code officials and design engineers. With this proposal and public comment, the design requirements in the IBC, NFPA 221, and ASCE 7 will all be coordinated. Without this code change, even if an engineer or code official were to find the reference to NFPA 221 and the appropriate section in that standard, there is no guidance in any of the three documents as to what kind of load it is (allowable stress or strength design), or what load combinations to use.

In response to the Committee's statement published in the Report of the Committee Action Hearings regarding the cost of construction, buildings incorporating fire walls tend to be large buildings whose structures are designed by an engineer. The additional cost of designing the fire walls for this load is not significant.

FS28-15

FS29-15
706.2

Proposed Change as Submitted

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

2015 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:** 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.

Reason: There is widely accepted interpretation by many building departments and structural engineers that the roof and floor diaphragms must be continuous to properly perform its function. The sheathing which comprises these diaphragms in light frame construction is generally wood structural panels between 7/16 inches to 23/32 inches thickness. These panels represent a very small risk of causing failure of the wall on the unaffected side of a double fire wall assembly. The benefit of performing the seismic function as a diaphragm is generally regarded as well worth any very small risk caused by fire exposure from one side of a double fire wall.
The following link is to a Structural Engineers of Southern California recommendation to carry the floor sheathing through these fire walls.

http://www.icclabc.org/uploads/Opinion_from_SEAOSC_on_Firewall_Final.pdf

Cost Impact: Will not increase the cost of construction
This code change does not create a new requirement. It allows an additional option for compliance that is not required.

FS29-15 : 706.2-MAIEL5795

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on a lack of data to substantiate the floor or roof sheathing being continuous through the fire wall. Also, it is not understood how structural stability will be achieved under loading and fire conditions.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Homer Maiel, PE, CBO, representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay) (hmaiel@gmail.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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 SDC D through F, where ~~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.

Commenter's Reason: There is widely accepted interpretation by many building departments and structural engineers that the roof and floor diaphragms must be continuous to properly perform its function. The sheathing which comprises these diaphragms in light frame construction is generally wood structural panels between 7/16 inches to 23/32 inches thickness. These panels represent a very smallrisk of causing failure of the wall on the unaffected side of a double fire wall assembly. The benefit of performing the seismic function as a diaphragm is generally regarded as well worth any very smallrisk caused by fire exposure from one side of a double fire wall. The following link is to a Structural Engineers of Southern California recommendation to carry the floor sheathing through these fire walls. http://www.icclabc.org/uploads/Opinion_from_SEAOSC_on_Firewall_Final.pdf

FS29-15

FS30-15
706.3

Proposed Change as Submitted

Proponent : Sam Francis, American Wood Council, representing American Wood Council (sfrancis@awc.org)

2015 International Building Code

Revise as follows:

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

1. Fire walls in buildings of Type I or Type II construction shall be of any approved noncombustible materials.

   ~~**Exception:** Buildings~~

2. Fire walls in buildings of Type III or Type IV construction shall be of any approved noncombustible materials or of cross-laminated timber protected by a layer of 5/8 inch Type X gypsum wallboard
3. Fire walls in buildings of Type V construction shall be of any approved material.

Reason: This proposal would permit cross-laminated timber fire walls to be used in Types III and IV construction in lieu of noncombustible materials. CLT is a prefabricated engineered wood product consisting of not less than three layers of solid-sawn lumber or structural composite lumber where the adjacent layers are cross oriented and bonded with structural adhesive toform a solid wood element. These solid wood elements can easily achieve a high fire resistance rating and have inherent structural advantages in fire conditions, when protected and rated appropriately. CLT has been shown by fire testing to perform well and will offer flexibility and practicality of design.

Cost Impact: Will not increase the cost of construction
there would be a decrease in construction costs with this proposal. Fire Walls could be constructed of the same material as the exterior walls utilizing methods and materials less expensive than noncombustible walls and with savings on labor as well. Fire tests conducted on this material has shown it to perform very well under fire conditions.

FS30-15 : 706.3-FRANCIS5269

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on a lack of data to substantiate cross-laminated timber protected with gypsum wallboard was equivalent to noncombustible material. Further, it is not clear that the gypsumboard needs to completely encapsulate the cross-laminated timber members.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Sam Francis, representing American Wood Council (sfrancis@awc.org) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

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

> ~~**Exception**~~ **Exceptions:** ~~Buildings~~
> 1. Fire walls of combustible materials shall be permitted in buildings of Type V construction.
> 2. Fire walls of Cross Laminated Timber (CLT) shall be permitted in buildings of Type IV construction. The CLT shall have the fire resistance rating required in Table 706.4. In addition, the CLT shall be protected by two layers of 5/8 in. Type X gypsum board on each side.

Commenter's Reason: The 2015 IBC permits CLT in Type IV construction in exterior walls. Those walls have a fire resistance rating requirement of 2 hours. CLT has been shown to achieve this rating while bearing the full design load of the structure. Since protected CLT may be substituted for noncombustible construction in the exterior wall, it makes sense that it should be permitted to separate such buildings as a fire wall. But to add to the ability of the wall to resist the insult of fire exposure, this proposal further requires the CLT to be protected by two layers of 5/8-in. Type X gypsum board. This has been shown to be a robust assembly capable of performing the functions of a fire wall. For more information on these fire tests, on our other public comments, and more information on CLT, visit the following website: http://www.awc.org/Code-Officials/2015-IBC-Code-Changes/.

FS30-15

FS32-15
706.5.1

Proposed Change as Submitted

Proponent : Stephen Thomas, representing Colorado Chapter (sthomas@coloradocode.net)

2015 International Building Code

Revise as follows:

706.5.1 Exterior walls. Where ~~the~~ a *fire wall* intersects an *exterior* ~~*walls*~~ *wall*, the *fire-resistance rating* and opening protection of the *exterior walls* shall comply with one of the following:

1. The *exterior walls* on both sides of the *fire wall* shall have a 1-hour *fire-resistance rating* with $^{3}/_{4}$-hour ~~protection where~~ opening ~~protection is required by Section 705.8~~ protectives. The *fire-resistance rating* of the *exterior wall* shall extend not less than 4 feet (1220 mm) on each side of the intersection of the *fire wall* to *exterior wall*. The maximum area of protected openings located in the 4-foot (1220 mm) exterior wall segments shall not exceed 15 percent of the wall segment in any story. *Exterior wall* intersections at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad) do not need *exterior wall* protection.
2. Buildings or spaces on both sides of the intersecting *fire wall* shall assume to have an imaginary *lot line* at the *fire wall* and extending beyond the exterior of the *fire wall*. The location of the assumed line in relation to the *exterior walls* and the *fire wall* shall be such that the *exterior wall* and opening protection meet the requirements set forth in Sections 705.5 and 705.8. Such protection is not required for *exterior walls* terminating at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad).

Reason: The current language in the code is confusing regarding the exterior openings on each side of a fire wall terminating at the exterior wall. It references required protected openings in Section 705.8. Table 705.8 limits the area of unprotected and protected openings based on fire separation distance. It does not "require" protected openings anywhere. We have set a limitation of 15% of the area of the protected wall to limit the amount of openings. The 15% is based on the amount of protected openings permitted in Table 705.8 for a fire separation distance of 3-5 feet. We have also done some minor editorial revisions to make the section read better.

Cost Impact: Will not increase the cost of construction
This change is a clarification of the code language. It will not affect the cost of construction.

FS32-15 : 706.5.1-THOMAS4434

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt the proposed revisions were confusing and unnecessary. Further it is unclear if the 15 percent allowance is in addition to the maximum allowable openings in Table 705.8. The committee felt this should not be additive.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Masoud Sabounchi, representing ACE Inc. (masoud@acecode.com) requests Approve as Submitted.

Commenter's Reason: Section 706.5.1 offers two options. One is protection of the exterior wall for 4 ft on each side of the fire wall and one is selection of an imaginary lot line and protection of the exterior walls and openings based on proximity of the exterior walls to this imaginary lot line. As such reference to protection of openings in the exterior wall in option one would pertain to the actual property line. These property lines may have a fire separation distance of 20 ft, 30 ft, and so on from the 4 ft section of the fire resistance rated exterior wall. Option one does not require an imaginary lot line to be implemented. As such the intent of the code to prevent fire migration from one building to the other in the 4 ft protected regions is not presently conveyed and the proposed change correctly addresses this issue by limiting area of the opening and requiring protected openings within the 4 ft wall section.

Public Comment 2:

Proponent : Stephen Thomas, Colorado Code Consulting, LLC, representing Colorado Chapter ICC (sthomas@coloradocode.net) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

706.5.1 Exterior walls. Where a *fire wall* intersects an *exterior wall*, the *fire-resistance rating* and opening protection of the *exterior walls* shall comply with one of the following:

1. The *exterior walls* on both sides of the *fire wall* shall have a 1-hour *fire-resistance rating* with $^{3}/_{4}$-hour opening protectives. The *fire-resistance rating* of the *exterior wall* shall extend not less than 4 feet (1220 mm) on each side of the intersection of the *fire wall* to *exterior wall*. ~~The maximum area of protected openings located in the 4-foot (1220 mm) exterior wall segments shall not exceed 15 percent of the wall segment in any story.~~ *Exterior wall* intersections at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad) do not need *exterior wall* protection.
2. Buildings or spaces on both sides of the intersecting *fire wall* shall assume to have an imaginary *lot line* at the *fire wall* and extending beyond the exterior of the *fire wall*. The location of the assumed line in relation to the *exterior walls* and the *fire wall*

shall be such that the *exterior wall* and opening protection meet the requirements set forth in Sections 705.5 and 705.8. Such protection is not required for *exterior walls* terminating at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad).

Commenter's Reason: This public comment removes the limitation of openings within the one-hour exterior wall on each side of a fire wall when the exterior walls are within 180 degrees of each other. The way the current language in the IBC is written, you could have the entire exterior wall constructed of unprotected openings such as a store front window system. This would allow the spread of fire from building to building around the exterior wall. That is not the intent of this section. It is intended to restrict the spread of fire around the fire wall when the exterior walls are within 108 degrees of each other. Our public comment address the testimony at the committee hearing that our 15% limitation was too restrictive. This revision would allow any size opening in the exterior wall. However, the openings would need to be a minimum of 3/4 hour opening protectives. We believe that this would be a compromise to what was discussed at the hearings.
We also believe that this addresses the committee's comment that our change was confusing. We felt that the existing language was confusing and that is why we made the proposed change. By eliminating the reference to Table 705.8 and just stating that the openings in the exterior walls are required to be protected, we believe it makes the language much more clear.

FS32-15

FS34-15 Part II

707.9, 707.10 (New), 715.4 (New), 715.4.1 (New), Chapter 35

Proposed Change as Submitted

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

NOTE: PART I AND III DID NOT RECEIVE A PUBLIC COMMENT AND IS ON THE CONSENT AGENDA. PART I AND 3 ARE REPRODUCED FOR INFORMATIONAL PURPOSES ONLY FOLLOWING ALL OF PART II.

2015 International Building Code

Revise as follows:

707.9 ~~Voids~~ Joints at intersections. The ~~voids created~~ joints at the intersection of a *fire barrier* and ~~a nonfire-resistance-rated roof assembly or~~ the underside of a nonfire-resistance-rated ~~exterior wall assembly~~ sheathing, slab or deck above shall be filled. An approved material or system shall be used to fill the ~~void~~ joint, 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.

Add new text as follows:

707.10 Joints at intersections of fire barriers and nonfire-resistance-rated exterior walls The joints at the intersection of a fire barrier and a nonfire-resistance-rated exterior wall assembly shall be filled. An approved material or system shall be used to fill the joint, and it 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.

715.4 Joints between fire barriers and nonfire-resistance-rated roofs Where required elsewhere in this code,joints at the intersection of fire barriers and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be protected by an approved continuity head-of-wall joint system installed as tested in accordance with ASTM E 2837 to provide a F rating for a time period not less than the required fire-resistance rating of the wall assembly in which it is installed.

715.4.1 Installation Continuity head-of-wall joint systems shall be securely installed in or over the joint 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.

Add new standard(s) as follows:
ASTM E 2837-13 Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies

Reason: The 2012 and later editions of the International Building Code have a provision whereby the 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 with an approved material or system. While this language gives the code official the ability to accept some matching tested system, it does not acknowledge the existence of a new fire test standard and tested systems that specifically addresses the fire performance of these joints. This proposal then recognizes the existence of the new Standard ASTM E 2837, entitled "Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies", along with the tested systems. Since there are a limited number of published systems at this time, the use of system is being proposed as an option to the current allowance of an approved material or system. If desired, at some later date, when more tested systems are available, the code language can be revised once again to mandated tested systems in much the same way systems tested to ASTM E 1966 or UL 2079 are mandated for rated-to-rated construction.

Cost Impact: Will not increase the cost of construction
This code change will not increase the cost of construction as it does not mandate a tested system. In cases where a tested system would be the option chosen, the cost of construction will vary. In some cases, it may be decreased, due to the time saved (and therefore expense saved) by not needing to engineer and get approval for a custom-designed solution.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2837, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS34-15 Part II : 707.9-CRIMI4305

Public Hearing Results

Part II

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on a lack of data to substantiate the need for such a system. Further, the committee felt that the installation of these systems would increase the cost of construction contrary to what the proponent indicated.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Vincent Sagan, Thomas Associates, Inc., representing Metal Building Manufacturers Association (vsagan@mbma.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

707.9 Joints at intersections of fire barriers and nonfire resistance rated roofs. The joints created at the intersection of a *fire barrier* and the

underside of ~~a nonfire-resistance-rated~~ nonfire-resistance-rated roof sheathing, roof slab, or roof deck above shall be filled by one of the following:

1. An approved material or system shall be used to fill the joint, 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.

2. A head-of-wall joint system installed as tested in accordance with ASTM E 2837. The head-of-wall joint system shall have a F rating / T rating of not less than the required fire resistance rating of the vertical fire barrier.

707.10 Joints at intersections of fire barriers and nonfire-resistance-rated exterior walls The joints created at the intersection of a fire barrier and a nonfire-resistance-rated exterior wall assembly shall be filled. An approved material or system shall be used to fill the joint, and it 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.

~~**715.4 Joints between fire barriers and nonfire-resistance-rated roofs** Where required elsewhere in this code,joints at the intersection of fire barriers and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be protected by an approved continuity head-of-wall joint system installed as tested in accordance with ASTM E 2837 to provide a F rating for a time period not less than the required fire-resistance rating of the wall assembly in which it is installed.~~

~~**715.4.1 Installation** Continuity head-of-wall joint systems shall be securely installed in or over the joint 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.~~

Commenter's Reason: The committee disapproved code change proposal FS34 Part II based on a lack of data to substantiate the need for such a system. However, this is a common condition present in Construction Types IIB, IIIB, and VB, including metal buildings, where a vertical fire barrier meets a nonrated horizontal assembly. The building code requires continuity at these joints. This modified proposal adds an option that provides continuity at these joints with a tested system. UL listings currently exist for these systems. Also included in this modified proposal is the replacement of the term "void" with "joint," which is more appropriate. These modifications will make it easier for building officials to enforce the building code. We urge you to overturn the original disapproval of code change proposal FS34 Part II and approve this modified proposal.

FS34-15 Part II

NOTE: PART I DID NOT RECEIVE A PUBLIC COMMENT AND IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY

FS34-15 Part I

706.10, 706.10.1 (New), 706.10.2 (New), Chapter 35

Proposed Change as Submitted

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

2015 International Building Code

706.10 Joints. Joints made in or between *fire walls* shall comply with Section 715.

Add new text as follows:

706.10.1 Joints at floors. Where a fire wall is permitted to terminate at the underside of the roof sheathing, deck or slab in accordance with 706.6, joints at the intersection of a fire wall and the underside of a fire-resistance-rated roof assembly, slab or deck above shall comply with Section 715.

706.10.2 Joints at nonfire-resistance rated roof intersections in lieu of parapets. Where vertical continuity in accordance with section 706.6 is not provided by a parapet, joints at the intersection of a fire wall and a nonfire-resistance-rated roof assembly, roof slab, or roof deck shall be protected by an approved continuity head of wall joint system installed as tested in accordance with ASTM E2837. The system shall have an F rating/T rating of not less than that of the firewall.

Add new standard(s) as follows:
Add new Referenced Standard to Chapter 35 as follows:

ASTM E2837, Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies.

Reason: The Code allows several exceptions to the general requirement for vertical continuity of fire walls in section 706.6, and specifically to the requirement to have a parapet. However, unlike for fire barriers, the Code is silent as to how the joints created between the top of a fire wall and a fire-resistance rated and/or non-fire-resistance rated roof are to be protected from fire spread through the top-of-wall joint when any of the parapet exceptions are used.
In the case of fire barriers, which are a less critical building safety feature than fire walls, Section 707.9 was added to the 2012 IBC to clarify that voids created at the intersection of a fire barrier and a nonfire-resistance rated roof assembly must be filled with an approved material or system to prevent fire spread. One example of such an application is a fire barrier used to separate occupancies in a metal (typically pre-engineered) building that would not have a fire-rated roof. The ASTM E 2837 Standard evaluates continuity head-of-wall joint systems for this specific application. The joint systems tested and listed in accordance with ASTM E2837 provide an assurance that the installed joint detail will provide the continuity of fire resistance established by the rated wall assembly, right up to the deck above.

In the hierarchy of passive fire protection construction elements, fire walls are used in the most critical locations and applications. The code language proposed here

parallels that of sections 707.8 and 707.9 for fire barriers, except that in 706.12, the ASTM E2837 standard has been referenced. Using tested joint systems at the top of the firewall where the firewall ends below the roof deck will provide an assurance that fire cannot get past the fire wall at this potential weak point. None of the joint systems listed by UL for this application require any modifications to the wall or to the roof deck. The test is focused only on the fire performance of the joint itself.

At the time Section 707.9 was proposed to address the top-of-wall joint for fire barriers intersecting a non-rated roof, no consensus test standard existed to test head-of-wall joint systems involving nonfire-resistance rated horizontal assemblies. Therefore, the 2012 code described how the void protection is to be provided. However, it is rather subjective for the designer and code official to determine. ASTM E 2837, "Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated horizontal Assemblies" was developed precisely to address this condition. This standard allows for the objective evaluation of a joint's ability to prevent fire spread through the joint installed at the intersection of a rated wall assembly and a non-rated roof assembly.

The ASTM E 2837 F and T ratings directly address the top-of-wall joint performance requirements specified in 707.9 that the material or system will not dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases. For fire walls, the Code should specify a test method for the top-of-wall joint to ensure that this performance is achieved without any doubt.

Cost Impact: Will not increase the cost of construction
Based on the continuity provisions, these joints are already required to be addressed.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2837, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS34-15 Part I : 706.10.1 (New)-CRIMI4301

Public Hearing Results

Part I

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on a lack of data to substantiate the need for such a system. Further, it seems that these requirements would better fit in Section 705. Lastly, the committee felt that the installation of these systems would increase the cost of construction contrary to what the proponent indicated.

Assembly Action : None

NOTE: PART III DID NOT RECEIVE A PUBLIC COMMENT AND IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY

FS34-15 Part III

715.7 (New), Chapter 35

Proposed Change as Submitted

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

2015 International Building Code

Add new text as follows:

715.7 Joints at top of wall Intersections in fire barriers The voids created at the intersection of a fire barrier and a non-fire-resistance-rated floor or roof sheathing, slab or deck above shall be protected by an approved continuity head of wall joint system installed as tested in accordance with ASTM E2837. The system shall have an F rating/T rating of minimum 1 hour, but not less than that of the fire barrier.

Add new standard(s) as follows:
ASTM E 2837-13, Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies

Reason: Chapter 7 of the IBC has numerous requirements for continuity of vertical and horizontal fire resistance rated assemblies. Wall continuity (i.e. continuity of fire resistance) is required at joint openings, which are typically linear voids, gaps, openings, or other discontinuities within an assembly, or at the intersection with other assemblies. For the intersection of a rated wall assembly and nonrated horizontal assembly above (floor or roof), the joint between the two assemblies would need to provide the same fire resistance as the rated wall assembly. A joint detail with fire resistance less than that of the wall would allow for the propagation of fire and/or smoke to the other side of the wall much earlier than the rated wall would, thus diminishing the life safety function of the rated wall, and even making the wall near useless if the fire and/or smoke are able to spread very quickly through the joint above the wall to the other side of the fire barrier.
Test methods ASTM E1966 and UL 2079, which are referenced in the IBC, are only applicable to the testing of joints between two intersecting assemblies if both of the assemblies are fire resistance rated. To allow the evaluation of the fire resistance of joint details between a fire resiatance rated wall and a non-fire rated roof or floor above, ASTM began work in 2007 on a new test method. That test standard was completed and issued in 2011, and was issued as "ASTM E2837, 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 the standard having existed for almost 4 years, both UL and Intertek now have tested system listings in accordance with the standard.

It is important to note that none of the listed systems requires any modifications at all to the wall assembly or to the floor or roof assembly above. The listed systems simply specify the materials that are needed to fill and seal the joint in a manner that will prevent premature fire spread through that joint. As indicated by the title of the ASTM standard ("Continuity Head of Wall Joint Systems"), the test is designed to evaluate the continuity of the wall's fire resistance rating up to the underside of the floor or roof deck above. Passing the test means that the joint detail must not allow

fire spread through the joint prior to the given fire resistance rating, which would normally be the fire resistance rating of the fire barrier wall.

Section 707.5 requires smoke barriers to form an effective membrane continuous from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. Section 707.9 of the IBC requires the joint opening at the top of the rated fire barrier wall assembly below the nonrated horizontal assembly to be protected, using performance language and dictating that the chosen material or system be approved. The ASTM E 2837 Standard was created to evaluate continuity head-of-wall joint systems for this specific application, providing exactly the code-mandated performance. Using a tested joint detail, instead of allowing joint details to be improvised for each and every building and then requiring the AHJ to approve the detail, will prvide a measure of consistency, predictability, and an even level of life safety from one building to the next.

To achieve the rating, the joint system must remains in the opening during the fire resistance test and the hose stream test, and will have withstood the fire resistance test for the rating period equal to the rated wall assembly by preventing flaming on the unexposed side of the test specimen and on the underside of the nonrated horizontal assembly on the unexposed side. The Integrity test also ensures no occurrence of ignition of the cotton pad, which is related to the passage of hot gases in the current IBC 707.9 requirements.

Cost Impact: Will increase the cost of construction
This proposal may increase the cost of construction if the chosen joint detail for a given installation requires more work or higher cost materials than an inferior joint detail that an AHJ might have been willing to approve. This proposal may decrease the cost of construction in cases where it allows a contractor to simply specify a tested and listed detail, thus saving on the time and costs of designing a unique joint detail and getting that detail approved.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2837, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS34-15 Part III : 715.7 (New)-CRIMI4304

Public Hearing Results

Part III

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on a lack of data to substantiate the need for such a system. Further, the committee felt that the installation of these systems would increase the cost of construction contrary to what the proponent indicated.

Assembly Action : None

FS35-15

707.3.11 (New), 711.2.4.7 (New)

Proposed Change as Submitted

Proponent : Adolf Zubia, ICC Staff, representing Fire Code Action Committee (fcac@iccsafe.org)

2015 International Building Code

Add new text as follows:

707.3.11 Fire Pump Rooms. The *fire barriers* separating fire pump rooms from other building areas shall have a *fire-resistance rating* of not less than that is indicated in Section 913.2.1.

711.2.4.7 Fire Pump Rooms. The *horizontal assemblies* separating fire pump rooms from other building areas shall have a *fire-resistance rating* of not less than that is indicated in Section 913.2.1.

Reason: This proposal is submitted by the ICC Fire Code Action Committee (FCAC). This ICC committee was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the Fire-CAC has held 6 open meetings and numerous Regional Work Group and Task Group meetings and conference calls which included members of the committees as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the FAC website at: http://www.iccsafe.org/cs/CAC/Pages/default.aspx?usertoken={token}&Site=icc
Fire pump rooms are constructed of fire barriers and horizontal assemblies as stated in Section 913.2.1 but a pointer should be inserted in the fire barrier section for designers and code officials. F203–07/08 inserted 912.2.1, however, it was never correlated to the fire barrier or horizontal assembly section in Chapter 7.

Cost Impact: Will not increase the cost of construction
This change does not add any new requirements for fire resistance rated separation of fire pump rooms. It merely provides guidance to the designer by pointing to the existing requirements for both vertical and horizontal separation.

FS35-15 : 707.3.11 (New)-ZUBIA4193

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt this proposal added redundant language to the code as the user will obtain these same requirements in Chapter 9.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Adolf Zubia, representing Fire Code Action Committee (fcac@iccsafe.org) requests Approve as Submitted.

Commenter's Reason: This proposal correlates the fire pump room requirements from Chapter 9 to Chapter 7 as originally intended by the proponent of F203–07/08. The committee correctly stated that this is redundant language, however, Sections 707.3 and 711.2.4 is a list of items already correlated to other parts in the code. This list is helpful to the users of the code and adding fire pump room construction completes the list and should be included.
This proposal is submitted by the ICC Fire Code Action Committee (FCAC). This ICC committee was established by the ICC Board of Directors to pursue opportunities to improve and enhance assigned International Codes or portions thereof. This includes both the technical aspects of the codes as well as the code content in terms of scope and application of referenced standards. Since its inception in July, 2011, the Fire-CAC has held 6 open meetings and numerous Regional Work Group and Task Group meetings and conference calls which included members of the committees as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the FAC website at: FCAC Website

FS35-15

FS36-15
707.6

Proposed Change as Submitted

Proponent : Joseph Hetzel, representing Door & Access Systems Manufacturers Association (Jhetzel@thomasamc.com)

2015 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 m^2). 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 m^2) 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 m^2) 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 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E 119 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 m^2) 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. <u>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 rolling steel *fire door* tested in accordance with UL 10B or NFPA 252 and labeled in accordance with Section 716.5.7.2.</u>

Reason: The current Exceptions do not address rolling steel fire doors, the most

common opening protective greater than 156 square feet (15 m^2). The proposed Exception reflects long-standing common practice where the use of rolling steel fire doors have been determined to be both necessary and practical as opening protectives. Rolling steel fire doors offer benefits and provide solutions for opening protection not available with other types of fire doors and should also qualify for exception.

Cost Impact: Will not increase the cost of construction
None.We believe the proposed change is consistent with common current practice and therefore only permits what is already being done. Since it is already being done, there is no effect on product or cost and therefore requires no further study.

FS36-15 : 707.6-HETZEL3421

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal because without the 25 percent aggregate width limitation there is no maximum on the number of these types of doors in a single length of fire barrier. Further, fire testing to substantiate this type of opening has not been submitted.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Joseph Hetzel, representing Door & Access Systems Manufacturers Association (Jhetzel@thomasamc.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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 m^2). 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 m^2) 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 m^2) 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 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E 119 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 m^2) 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 156 square feet (15 m2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a~~ A single rolling steel *fire door* tested in accordance with UL 10B or NFPA 252~~ and~~ , labeled in accordance with Section 716.5.7.2, and not exceeding 12 feet (3.66 m) in opening width and 14 feet (4.27 m) in opening height, shall be permitted as an opening protective in the wall.

Commenter's Reason:

- The language change from what was originally proposed in FS 36-15 addresses the concern about installing multiple rolling steel fire doors in a fire barrier wall. A single rolling steel fire door is commonly necessary for vehicular access and material handling purposes.
- Where a single rolling steel fire door is used in a fire barrier wall, the 25% maximum aggregate width allowance may be insufficient to allow a minimum useful opening width.
- The proposed maximum opening width and height dimensions accommodate vehicles and equipment commonly passing through openings utilizing rolling steel fire doors. The resulting 168 square foot maximum area represents only a 12 square foot increase above the current 156 square foot limitation. The new maximum area is accommodated by an oversize label, or an oversize certificate, issued by the listing agency which is typical of rolling steel fire doors larger than 120 square feet.

FS36-15

FS37-15
707.9

Proposed Change as Submitted

Proponent : Masoud Sabounchi, representing masoud sabounchi (masoud@acecode.com)

2015 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.

Reason: Section 707.5 requires fire barriers to be continuous through concealed spaces and be attached to the underside of the floor or roof sheathing, slab or deck. Section 707.9 creates a conflict with section 707.5 by allowing the fire barriers to terminate at the ceiling and the cavity space above the ceiling to be filled. Section 707.9 would allow fire barriers such as shafts, occupancy separations and similar to be discontinued through the cavity space of a non-fire resistance rated roof-ceiling assembly while the same fire barrier has to be continuous thru the cavity space of a fire resistance rated roof-ceiling assembly. This proposal coordinates section 707.9 with 707.5.

Cost Impact: Will not increase the cost of construction
This proposal is for coordiantion of section 707.9 with 707.5

FS37-15 : 707.9-SABOUNCHI4361

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee agreed that this proposal appropriately coordinates section 707.9 and 707.5.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Tony Crimi, representing International Firestop Council requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

707.9 Voids at intersections. The voids created at the intersection of a

fire barrier and– a nonfire-resistance rated roof sheathing, slab or deck 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.

Commenter's Reason: The proponent of this change identified a potential conflict in the language between 707.5 and 707.9, but as accepted by the Committee, this proposal creates a new problem.

The simple deletion of the text that was submitted by the proponents of FS37-15 will not fix the problem because the last sentence of 707.5 still directs the Code user to 707.8 and 707.9 for joints and voids at intersections. Even though users are directed to 707.9 from 707.5, the language submitted and accepted by the committee now provides no information to Code users on how to address voids at the intersection of fire barriers and roofs.

The preferred remedy is to bring consistency to the language between these two sections by using the same terminology in the two sections, as proposed here. This will clarify that 707.5 clearly addresses roof assemblies, and 707.9 addresses voids at intersections even where there is no membrane below the nonfire-resistance-rated roof sheathing, slab or deck.

Public Comment 2:

Proponent : Vincent Sagan, Thomas Associates, Inc., representing Metal Building Manufacturers Association (vsagan@mbma.com) requests Disapprove.

Commenter's Reason: Code change proposal FS37-15 modifies **Section 707.9 Voids at intersections**. This section is part of the fire barriers section of the IBC. Section 707.9 of the 2015 IBC clarifies that the void at the intersection of a fire barrier and a nonfire-resistant-rated roof, which is very common in metal buildings, shall be filled with an approved material that is securely installed for the entire length of the void so building movements can be accommodated and the passage of fire and hot gases are retarded. This clarification was a code change proposal submitted by the MBMA that was added to the 2012 IBC. It is also consistent with IBC Interpretation 34-08 on the 2006 IBC (see figure).

The reason for code change proposal FS37-15 is to remove a conflict between Section 707.5 and 707.9. However, there is no conflict. Section 707.5 of the 2015 IBC, copied below, addresses the continuity and extent of fire barriers:

"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."

Section 707.9 of the 2015 IBC addresses only the void at intersections of a fire barrier and nonfire-resistance-rated roof and exterior wall assemblies. In addition, Section 707.5 references Section 707.9 to address voids. Clearly Sections 707.5 and 707.9 pertain to different subjects. As a result, this code change proposal is unwarranted and incorrect. Thus, MBMA recommends that it should not be adopted.

CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION

SECTION 713.1
2006 Edition

IBC Interpretation 34-08
Issued 2-20-2009
BU_06_34_08

713.1 General. 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 it is installed. Fire-resistant joint systems shall be tested in accordance with Section 713.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

Exception: Fire-resistant joint systems shall not be required for joints in all of 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 707.
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 within open parking structures.
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 E 119.

• • • • • • • • • •

Q: Do the provisions of Section 713.1 of the *International Building Code* apply to a joint that occurs between a fire-resistance-rated assembly and a non-fire-resistance-rated assembly, such as where a fire-resistance-rated wall assembly terminates at the underside of a non-fire-resistance-rated roof assembly?

A: No. The provisions of Section 713.1 of the *International Building Code* are not applicable to the joint between a fire-resistance-rated assembly and a non-fire-resistance-rated assembly. The applicable code requirements for this type of intersection are contained in the provisions regarding continuity of the specific building element under consideration.

FS41-15
708.4, 718.4.2

Proposed Change as Submitted

Proponent : Jeffrey Shapiro, National Multifamily Housing Council, representing National Multifamily Housing Council (jeff.shapiro@intlcodeconsultants.com); Anthony Apfelbeck, City of Altamonte Springs Building/Fire Safety, representing City of Altamonte Springs (ACApfelbeck@altamonte.org)

2015 International Building Code

Revise as follows:

708.4 Continuity. Fire partitions 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 or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. In combustible construction where the *fire partitions* are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fireblocked or draftstopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall supported, except for walls separating tenant spaces in *covered and open mall buildings*, walls separating *dwellingunits*, walls separating *sleeping units* and *corridor* walls, in buildings of Type IIB, IIIB and VB construction.

Exceptions:

1. The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour *fire-resistance rating*.
2. Where the room-side fire-resistance-rated membrane of the *corridor* is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, the ceiling of the *corridor* shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system.
3. Where the *corridor* ceiling is constructed as required for the *corridor* walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly.
4. The fire partitions separating tenant spaces in a *covered or open mall building*, complying with Section 402.4.2.1, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in *attic* or ceiling spaces above tenant separation walls.
5. Attic fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four *storiesabovegrade plane*, provided the *attic* space is subdivided by draftstopping into areas not exceeding 3,000

square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.

6. Fireblocking or draftstopping is not required at the partition line in buildings equipped with an *automatic sprinkler system* installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.
7. In attics exceeding 5,000 square feet in area or covering more than four dwelling units in R-2 occupancies, attic fireblocking or draftstopping is not required at the partition line where the attic space is subdivided by multi-layered draftstops into areas not exceeding 5,000 square feet or above every four dwelling units, whichever is smaller, using one of the following for draftstopping materials. Joints of each layer shall be staggered from other layers. If roof trusses are used, draftstopping material shall be permitted to be placed with multiple layers on one side of the truss or with one or more layers on opposite sides.
    - 7.1. 2 or more layers of ½" gypsum board
    - 7.2. 2 or more layers of 15/32" wood structural panel,
    - 7.3. 3 or more layers of 7/16" oriented strand board (OSB),
    - 7.4. Other *approved* materials adequately supported.

718.4.2 Groups R-1 and R-2. Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwellingunits* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwellingunit* separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Where *corridor* walls provide a *sleeping unit* or *dwellingunit* separation, draftstopping shall only be required above one of the *corridor* walls.
2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
3. In occupancies in Group R-2 that do not exceed four *storiesabovegrade plane*, the *attic* space shall be subdivided by *draftstops* into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.
4. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustible concealed space where the draftstopping is being omitted.
5. In attics exceeding 5,000 square feet in area or covering more than four dwelling units in R-2 occupancies, attic fireblocking or draftstopping is not required at the partition line where the attic space is subdivided by multi-layered draftstops into areas not exceeding 5,000 square feet or

above every four dwelling units, whichever is smaller, using one of the following for draftstopping materials. Joints of each layer shall be staggered from other layers. If roof trusses are used, draftstopping material shall be permitted to be placed with multiple layers on one side of the truss or with one or more layers on opposite sides.

5.1. 2 or more layers of ½" gypsum board,
5.2. 2 or more layers of 15/32" wood structural panel,
5.3. 3 or more layers of 7/16" oriented strand board (OSB),
5.4. Other approved materials adequately supported.

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Reason: Concerns have been expressed by some fire officials regarding the expected time to failure of single layer attic draftstops; albeit, it is recognized that draftstops are not intended to offer significant fire resistance. The concept offered by this proposal is to provide draftstops that have a more robust fire performance at increased intervals, recognizing that staggered joints on multiple layers and increased material thickness to approximately one inch will significantly increase time to failure of an assembly versus what is currently permitted by the code. This improves the likelihood for an assembly to still be in place when the fire department arrives on the scene of a fire that has originated in or extended to an attic. Using IBC Table 722.6.2(1) for guidance, 2 layers of ½" gypsum board or 2 layers of 15/32" wood structural panel (such as plywood) bonded with exterior glue may provide 20 minutes of fire resistance. OSB is also a wood structural panel, but because industry standard is to use 7/16" OSB (as compared to 15/32" plywood), 3 layers was determined to be appropriate, given the performance objectives of this section. The proposed 5,000 square foot or 4-dwelling unit (whichever is smaller) threshold for applying this exception is included to ensure that someone won't argue that attics with a total area that is smaller than these thresholds don't need any draftstopping at all.
If the proposal that rewrites the entirety of Section 708.4 is approved, it is the intent of this code change that the proposed exception become Exception 4 to the revised Section 708.4.2, and there would be no need to duplicate the exception in Section 718.

Cost Impact: Will not increase the cost of construction
This proposal offers an additional option for construction that is not mandatory; therefore, it will not increase the cost of construction.

FS41-15 : 708.4-SHAPIRO5307

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that these provisions should be further limited to two dwelling units because at the proposed 5000 square foot threshold a fire can affect 3 or 4 dwelling units depending on their design and size.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Jeffrey Shapiro, representing National Multifamily Housing Council (jeff.shapiro@intlcodeconsultants.com) requests Approve as Submitted.

Commenter's Reason: The primary concern that led to a disapproval recommendation, contrary to the committee reason statement, was the lack of a stated story limit in the proposal. I was asked whether the intent of the new exception was to limit the application to 4-story buildings, and I responded "yes," without stating why. Then, since no such limit was stated in the proposal, the committee viewed the lack of a story limit as a deficiency. Since testimony had already been closed, I wasn't given a chance to offer that there was/is no reason to include a 4-story limit in the proposal because buildings exceeding 4 stories in height are required to have NFPA 13 sprinkler systems (not 13R). Once and NFPA 13 compliant attic protection has been provided, the new exception would be entirely moot because draftstops are not required in buildings protected in accordance with NFPA 13.

FS41-15

FS42-15

708.1, 708.4, 708.4 (New), 708.4.1 (New), 708.4.2 (New), 718.3, 718.3.2, 718.3.3, 718.4, 718.4.2, 718.4.3

Proposed Change as Submitted

Proponent : Jeffrey Shapiro, National Multifamily Housing Council, representing National Multifamily Housing Council (jeff.shapiro@intlcodeconsultants.com)

2015 International Building Code

Revise as follows:

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

1. Separation walls as required by Section 420.2 for ~~Groups~~ Group I-1~~, R-1, R-2~~ and ~~R-3~~ Group R occupancies.
2. Walls separating tenant spaces in *covered and open mall buildings* as required by Section 402.4.2.1.
3. Corridor walls as required by Section 1020.1.
4. Elevator lobby separation as required by Section 3006.2.
5. Egress balconies as required by Section 1019.2

Delete and substitute as follows:

~~**708.4 Continuity.** Fire partitions 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 or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. In combustible construction where the *fire partitions* are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fireblocked or draftstopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall supported, except for walls separating tenant spaces in *covered and open mall buildings*, walls separating *dwellingunits*, walls separating *sleeping units* and *corridor* walls, in buildings of Type IIB, IIIB and VB construction.~~

~~**Exceptions:**~~

1. ~~The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour *fire-resistance rating*.~~
2. ~~Where the room-side fire-resistance-rated membrane of the *corridor* is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, the ceiling of the *corridor* shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system.~~
3. ~~Where the *corridor* ceiling is constructed as required for the~~

~~*corridor* walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly.~~

~~4. The fire partitions separating tenant spaces in a *covered or open mall building*, complying with Section 402.4.2.1, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in *attic* or ceiling spaces above tenant separation walls.~~

1. ~~Attic fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four *storiesabovegrade plane*, provided the *attic* space is subdivided by draftstopping into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.~~

~~2. Fireblocking or draftstopping is not required at the partition line in buildings equipped with an *automatic sprinkler system* installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.~~

708.4 Continuity Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to:

1. The underside of the floor or roof sheathing, deck or slab above, or
2. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating that is not less than the fire-resistance rating of the fire partition.

Fire partitions shall be securely attached to 1 or 2 above.

Exceptions:

1. Fire partitions shall not be required to extend into a crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.

2. Fire partitions serving as a corridor wall shall not be required to extend above the lower membrane of a corridor ceiling provided the corridor ceiling membrane is equivalent to corridor wall membrane, and either:

2.1. The room-side membrane of the corridor wall extends to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, or

2.2. The building is equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, including automatic sprinklers installed in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above.

3. Fire partitions serving as a corridor wall shall be permitted to terminate at the upper membrane of the corridor ceiling assembly where the corridor ceiling is constructed as required for the corridor wall.

4. Fire partitions separating tenant spaces in a covered or open mall

building complying with Section 402.4.2.1 shall not be required to extend above the underside of a ceiling. Such ceiling shall not be required to be part of a fire-resistance-rated assembly, and the attic or space above the ceiling at tenant separation walls shall not be required to be subdivided by fire partitions.

Add new text as follows:

708.4.1 Supporting construction. The supporting construction for a fire partition shall have a fire-resistance rating that is equal to or greater than the required fire-resistance rating of the supported fire partition.

Exception. In buildings of Type IIB, IIIB and VB construction, the supporting construction requirement shall not apply to fire partitions separating tenant spaces in covered and open mall buildings, fire partitions separating dwelling units, fire partitions separating sleeping units, and fire partitions serving as corridor walls.

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. Fire-blocking up to the underside of the floor or roof sheathing, deck or slab above using materials complying with 718.2.1, or
2. Draftstopping 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 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 shall only be required above one of the corridor walls.
3. In Group R-2 occupancies with less than 4 dwelling units, fire-blocking and draftstopping shall not be required.
4. In Group R-2 occupancies that do not exceed four stories 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 less than 3 dwelling units, fire-blocking and draftstopping shall not be required in floor assemblies. This exception shall not apply to Group R-4.

Revise as follows:

718.3 Draftstopping in floors. ~~In combustible construction, draftstopping~~
Draftstopping shall be installed to subdivide floor/ceiling assemblies ~~in the locations prescribed~~ where required by Section 708.4.2. In other than Group R occupancies, draftstopping shall also 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 ~~Sections 718.3.2 through 718.3.3.~~ accordance with Section 903.3.1.1.

Delete without substitution:

~~**718.3.2 Groups R-1, R-2, R-3 and R-4.** Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more *dwellingunits*, in Group R-3 buildings with two *dwellingunits* and in Group R-4 buildings. Draftstopping shall be located above and in line with the *dwellingunit* and *sleeping unit* separations.~~

~~**Exceptions:**~~

~~1. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~
~~2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustible concealed spaces where the draftstopping is being omitted.~~

~~**718.3.3 Other groups.** In other groups, draftstopping shall be installed so that horizontal floor areas do not exceed 1,000 square feet (93 m^2).~~

~~**Exception:** Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~

Revise as follows:

718.4 Draftstopping in attics. ~~In combustible construction, draftstopping~~
Draftstopping shall be installed to subdivide *attic* spaces where required by Section 708.4.2. In other than Group R, draftstopping shall also be installed to subdivide combustible attic spaces and combustible concealed roof spaces ~~in the locations prescribed in Sections 718.4.2 and 718.4.3~~ 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 1203.2.

Exceptions. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Delete without substitution:

~~**718.4.2 Groups R-1 and R-2.** Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwellingunits* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwellingunit* separation walls that do not extend to the underside of the roof sheathing above.~~

~~**Exceptions:**~~

1. ~~Where *corridor* walls provide a *sleeping unit* or *dwellingunit* separation, draftstopping shall only be required above one of the *corridor* walls.~~
2. ~~Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~
2. ~~In occupancies in Group R-2 that do not exceed four *storiesabovegrade plane*, the *attic* space shall be subdivided by *draftstops* into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.~~
3. ~~Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustible concealed space where the draftstopping is being omitted.~~

~~**718.4.3 Other groups.** Draftstopping shall be installed in *attics* and concealed roof spaces, such that any horizontal area does not exceed 3,000 square feet (279 m^2).~~

~~**Exception:** Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~

Reason: 708.1 Editorial correlation with 2015 IBC Section 420.1, which added the requirement for separation walls in R-4 occupancies to be fire partitions. It is understood that Section 310.6 requires Group R-4 to meet requirements of Group R-3 unless otherwise specified by the IBC (that's also the reason that Section 708.4.2, Exception 5 for Group R-3 has to exclude R-4 to keep the exception consistent with current requirements). However, changing 708.1 to include all Group R occupancies will eliminate the appearance that R-4 has been omitted from the requirements of this section, particularly considering that R-4 is specifically listed in Section 420.1, which triggers provisions in Section 708.1.
708.4 The proposed rewrite results from an initial intent of adding another exception to this section (which I've now done in a separate proposal). I hadn't read the text of this section in quite some time because I knew what it was supposed to say. However, when I actually read the text, I found it unintelligible. The base paragraph has several different things going on…basic continuity, draftstopping/fire-blocking above, and supporting construction requirements. Then the 6 exceptions that follow aren't clear with respect to which parts of the main paragraph they apply to. Making matters worse, there is overlap and conflict between 708.4 and 718.3.2 and 718.4.2. I decided to undertake rewriting all of the provisions in an attempt to fix these issues while maintaining the current technical requirements. Although there has been no deliberate intent to change how the code applies, there were cases where interpretations were necessary to clarify conflicting provisions.

Deciphering the apparent intent of the code, pulling the sections and exceptions into pieces and reassembling them into comprehensible requirements took many hours, and I invite all "code groupies" and industry experts to closely compare the current and proposed provisions and notify me if any unintentional technical changes have occurred.

718.3.2 and 718.4.2. The existing draftstopping thresholds in 718.3.2 and 718.4.2 are specific to certain occupancies. These conflict with the draftstopping requirements in Section 708.4.2, which relate to continuity of fire partitions (recognizing that all dwelling and sleeping unit separations are fire partitions, as required by Sections 420.1 and 420.2). Based on the "specific over general" rule in Section 102.1 and the fact that there would be no reason for the current code to

include the thresholds in 718.3.2 and 718.4.2 if they weren't intended to override Section 708.4.2, the existing special thresholds in 718.3.2 and 718.4.2 were moved to Section 708.4 to eliminate the conflict and consolidate all of the draftstopping requirements for Group R in a single location.

The current text related to mansards and overhangs is irrelevant because the following sentence in the current Section 718.4.2 ties this text only to continuity of fire partitions that form separations for sleeping units and dwelling units.
By referencing the revised 708.4 in this proposal, any space above a fire partition (mansard, overhang, or whatever) requires the same level of protection based on the "continuity of fire partitions" requirement.

One additional change that should be considered by the Code Development Committee, but was skipped in this proposal because it is a technical change, is extending the Group R exception in Section 718.4 of this proposal (for attics) to include all Group R occupancies, as is the case for floor assemblies under 718.3.2 of the 2015 IBC. There is no apparent reason for 718.3 and 718.4 to have handled Group R occupancies differently for floors vs. attic spaces, and it makes more sense for all Group R attics to follow Section 708.4.2. Without fixing this, R-3 and R-4 will continue to have conflicting requirements in 708.4.2 and 718.4.

Cost Impact: Will not increase the cost of construction
There will be no impact on the cost of construction other than the cost savings associated with countless hours of design time that was saved by people who no longer had to study these sections for hours to figure out what the actually required.

FS42-15 : 708.1-SHAPIRO5284

Public Hearing Results

Committee Action: Approved as Modified

Modification:

718.4 Draftstopping in attics. Draftstopping shall be installed to subdivide attic spaces where required by Section 708.4.2. In other than Group ~~R-1 and R-2~~ R occupancies, draftstopping shall also 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 1203.2.

> **Exceptions.** Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Committee Reason: The committee agreed that the proposal was an editorial clarification that resulted in better application and enforcement of the provisions. The modification correctly makes Section 718.4 applicable to all Group R occupancies.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Carl Baldassarra, P.E., FSFPA, representing Code Technologies Committee (CTC@iccsafe.org) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

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. Fire-blocking up to the underside of the floor or roof sheathing, deck or slab above using materials complying with 718.2.1, or
2. Draftstopping 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 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 shall only be required above one of the corridor walls.
3. In Group R-2 occupancies with less than 4 dwelling units, fire-blocking and draftstopping shall not be required.
4. In Group R-2 occupancies that do not exceed four stories 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 less than 3 dwelling units, fire-blocking and draftstopping shall not be required in floor assemblies. ~~This exception shall not apply to Group R-4.~~

Commenter's Reason: This proposed modification is to delete the R-4 phrase in 708.4.2, Exception 5. FS122-15 deleted the requirement in 718.3.2 for Group R-4 and was approved. The reason from the proponent stated "There is no apparent reason for 718.3 and 718.4 to have handled Group R occupancies differently for floors vs. attic spaces, and it makes more sense for all Group R attics to follow Section 708.4.2. Without fixing this, R-3 and R-4 will continue to have conflicting requirements in 708.4.2 and 718.4". The phrase in Section 708.4.2, Exception should be deleted for consistency with the decision. Group R-4 and R-3 will be treated the same.

Public Comment 2:

Proponent : Tony Crimi, representing International Firestop Council requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

708.4 Continuity Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to:

1. The underside of the floor or roof sheathing, deck or slab above, or
2. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating that is not less than the fire-resistance rating of the fire partition.

Fire partitions shall be securely attached to 1 or 2 above.

Exceptions:

1. Fire partitions shall not be required to extend into a crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.
2. Fire partitions serving as a corridor wall shall not be required to extend above the lower membrane of a corridor ceiling provided the corridor ceiling membrane ~~is~~ has an equivalent fire resistance rating to the corridor wall membrane, and either:
    - 2.1. The room-side membrane of the corridor wall extends to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, or
    - 2.2. The building is equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, including automatic sprinklers installed in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above.
3. Fire partitions serving as a corridor wall shall be permitted to terminate at the upper membrane of the corridor ceiling assembly where the corridor ceiling is constructed as required for the corridor wall.
4. Fire partitions separating tenant spaces in a covered or open mall building complying with Section 402.4.2.1 shall not be required to extend above the underside of a ceiling. Such ceiling shall not be required to be part of a fire-resistance-rated assembly, and the attic or space above the ceiling at tenant separation walls shall not be required to be subdivided by fire partitions.

Commenter's Reason: The use of the terminology "... provided the corridor ceiling

membrane is equivalent to corridor wall membrane ..." in section 708.4 is ambiguous and will lead to confusion in enforcement. Based on the submittor's supporting statement, we believe that this was intended to be "equivalent" in terms of the fire resistance rating of the membrane in an assembly. Otherwise, this language could be used to install an equivalent thickness, or type of membrane material (e.g. Type X versus regular gypsum board), irrespective of its equivalency, or lack thereof, in terms of fire performance.
This is particulalry important because 708.4 has been revised to include all Group R occupancies. Table 1020.1 requires corridors in Group R occupancies having greater than 10 occupants to have a 0.5 hour fire resistance rating in conjunction with the sprinkler system.

Public Comment 3:

Proponent : Gregory Keith, representing The Boeing Company (grkeith@mac.com) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

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

1. Separation walls as required by Section 420.2 for ~~Groups~~ Group I-1~~, R-1, R-2~~ and ~~R-3~~ Group R ocupancies.
2. Walls separating tenant spaces in *covered and open mall buildings* as required by Section 402.4.2.1.
3. Corridor walls as required by Section 1020.1.
4. Elevator lobby separation as required by Section 3006.2.
5. Egress balconies as required by Section 1019.2

~~**708.4 Continuity.** Fire partitions 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 or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. In combustible construction where the *fire partitions* are not required to be continuous to the sheathing, deck or slab, the space between the ceiling and the sheathing, deck or slab above shall be fireblocked or draftstopped in accordance with Sections 718.2 and 718.3 at the partition line. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall supported, except for walls separating tenant spaces in *covered and open mall buildings*, walls separating *dwellingunits*, walls separating *sleeping units* and *corridor* walls, in buildings of Type IIB, IIIB and VB construction.~~

~~**Exceptions:**~~

1. ~~The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour *fire-resistance rating*.~~
2. ~~Where the room-side fire-resistance-rated membrane of the *corridor* is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated~~

~~floor or roof above, the ceiling of the *corridor* shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system.~~

~~3. Where the *corridor* ceiling is constructed as required for the *corridor* walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly.~~

~~4. The fire partitions separating tenant spaces in a *covered or open mall building*, complying with Section 402.4.2.1, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in *attic* or ceiling spaces above tenant separation walls.~~

1. ~~Attic fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four *storiesabovegrade plane*, provided the *attic* space is subdivided by draftstopping into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.~~

~~2. Fireblocking or draftstopping is not required at the partition line in buildings equipped with an *automatic sprinkler system* installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.~~

708.4 Support of fire partitions Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below and shall be securely attached thereto.

Exception: Fire partitions shall not be required to extend into a crawl space below where the floor above the crawl space has a minimum 1 hour-fire-resistance rating.

The supporting construction for a fire partition shall have a fire-resistance rating that is equal to or greater than the required fire-resistance rating of the supported fire partition.

Exception: In buildings of Type IIB, IIIB and VB construction, the supporting construction requirement shall not apply to fire partitions separating tenant spaces in covered and open mall buildings, fire partitions separating dwelling units, fire partitions separating sleeping units, and fire partitions serving as a corridor wall.

708.5 Continuity. Fire partitions shall extend vertically to a floor or roof above in accordance with one of the following and shall be securely attached thereto:

1. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating that is not less than the fire-resistance rating of the fire partition, or
2. The underside of the floor or roof sheathing, deck or slab above of floor or roof consturction not having a fire-resistance rating.

Exceptions:

1. Corridor ceiling construction shall be permitted to be in accordance with one of the following:

1.1 The room-side membrane of the corridor wall shall terminate at the underside of a floor or roof constructed of materials approved for a 1-hour fire-resistance rated floor/ceiling or roof/ceiling assembly. The corridor side membrane of the corridor wall shall terminate at the corridor ceiling membrane constructed of materials approved for a 1-hour fire-resistane rated floor-ceiling or roof-ceiling assembly to include suspended ceilings, dropped ceilings and lay-in roof/ceiling panels, which are a portion of a fire-resistance rated assembly, or

1.2. A corridor ceiling constructed as required for a fire partition wall. When this method is utilized, the corridor-side membrane of the corridor wall shall terminate at the lower ceiling membrane and the room-side membrane of the corridor wall shall terminate at the upper ceiling membrane.

2. Fire partitions separating tenant spaces in a covered or open mall building complying with Section 402.4.2.1 shall not be required to extend above the underside of a ceiling. Such ceiling shall not be required to be part of a fire-resistance rated assembly, and the attic or space above the ceiling at tenant separation walls shall not be required to be subdivided by fire partitions.

708.5.1 Fireblocking and draftstopping 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 718.2.1, or
2. Draftstopping 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 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 shall only be required above one of the corridor walls.
3. In Group R-2 occupancies with less than 4 dwelling units, fireblocking and draftstopping shall not be required.
4. In Group R-2 occupancies that do not exceed four stories 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 less than 3 dwelling units, fire-blocking and draftstopping shall not be required in floor assemblies. This exception shall

not apply to Group R-4.

718.3 Draftstopping in floors. ~~In combustible construction, draftstopping~~
Draftstopping shall be installed to subdivide floor/ceiling assemblies ~~in the locations prescribed~~ where required by Section 708.5.1. In other than Group R occupancies, draftstopiping shall also be installed to subdivide combustible floor/ceiling assemblies do that horizontal floor areas do not exceed 1000 square feet (93 m^2).

Exception: Buildings equipped throughout with an automatic sprinkler system in ~~Sections 718.3.2 through 718.3.3.~~ accordance with Section 903.3.1.1.

~~**718.3.2 Groups R-1, R-2, R-3 and R-4.** Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more *dwellingunits*, in Group R-3 buildings with two *dwellingunits* and in Group R-4 buildings. Draftstopping shall be located above and in line with the *dwellingunit* and *sleeping unit* separations.~~

> ~~**Exceptions:**~~
> ~~1. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~
> ~~2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustible concealed spaces where the draftstopping is being omitted.~~

~~**718.3.3 Other groups.** In other groups, draftstopping shall be installed so that horizontal floor areas do not exceed 1,000 square feet (93 m^2).~~

> ~~**Exception:** Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~

718.4 Draftstopping in attics. ~~In combustible construction, draftstopping~~
Draftstopping shall be installed to subdivide *attic* spaces where required by Section 708.5.1. In other than Group R occupancies, draftstopping shall also be installed to subdivide combustible attic spaces and combustible concealed roof spaces ~~in the locations prescribed in Sections 718.4.2 and 718.4.3~~ 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 1203.2.

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

~~**718.4.2 Groups R-1 and R-2.** Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwellingunits* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwellingunit* separation walls that do not extend to the underside of the roof sheathing~~

~~above.~~

~~**Exceptions:**~~

1. ~~Where *corridor* walls provide a *sleeping unit* or *dwellingunit* separation, draftstopping shall only be required above one of the *corridor* walls.~~
2. ~~Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~
2. In occupancies in Group R-2 that do not exceed four ~~*storiesabovegrade plane*, the *attic* space shall be subdivided by *draftstops* into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.~~
3. ~~Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers are installed in the combustible concealed space where the draftstopping is being omitted.~~

~~**718.4.3 Other groups.** Draftstopping shall be installed in *attics* and concealed roof spaces, such that any horizontal area does not exceed 3,000 square feet (279 m^2).~~

~~**Exception:** Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.~~

1020.1 Construction. *Corridors* shall be fire-resistance rated in accordance with Table 1020.1. The *corridor* walls, floors and ceilings required to be fire-resistance rated shall comply with Section 708 for *fire partitions*.

Exceptions:

1. A *fire-resistance rating* is not required for *corridors* in an occupancy in Group E where each room that is used for instruction has not less than one door opening directly to the exterior and rooms for assembly purposes have not less than one-half of the required *means of egress* doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A *fire-resistance rating* is not required for *corridors* contained within a *dwelling unit* or *sleeping unit* in an occupancy in Groups I-1 and R.
3. A *fire-resistance rating* is not required for *corridors* in *open parking garages*.
4. A *fire-resistance rating* is not required for *corridors* in an occupancy in Group B that is a space requiring only a single *means of egress* complying with Section 1006.2.
5. *Corridors* adjacent to the *exterior walls* of buildings shall be permitted to have unprotected openings on unrated *exterior walls* where unrated walls are permitted by Table 602 and unprotected openings are permitted by Table 705.8.

Commenter's Reason: FS 42-15 was intended to be an editorial correlation of

current fire partition related technical provisions. The proponent captured the importance of this effort in his cost impact statement. "There will be no impact on the cost of construction other than the cost savings associated with the countless hours of design time that was saved by people who no longer had to study these sections for hours to figure out what was actually required." With their approval as modified, the Fire Safety Code Committee agreed in their reason statement "that the proposal was an editiorial clarification that resulted in better application and enforcement of the provisions."

Section 708.4 is one of the most confusing and misunderstood provisions in the International Building Code. This is primarily owed to the fact that the section is one run-on paragraph that addresses several different technical issues and contains six out of context exceptions. Although FS 42 was a step in the right direction, it was only a partial fix. This public comment is a comprehensive approach towards creating logical and functional fire partition continuity provisions.

It should be noted that this public comment is entirely editiorial in that it makes no technical changes although charging verbiage has been restated to provide necessary clarification. Formerly, Section 708.4 addressed three different tecnical issues in one paragraph. Those were structural support of fire partitions, vertical continuity of fire partitions and fire-blocking and draft-stopping in combustible construction. This public comment segregates those issues through a reorganization of the applicable technical provisions. Additionally, the assorted exceptions have been placed in context with the actual provision that they are intended to modify.

This public comment further improves the initiative taken by FS 42-15 and will considerably improve the functionality of the 2018 Edition of the International Building Code resulting in more consistent interpretation and application of fire partition provisions.

FS42-15

FS43-15 Part I

708.6

Proposed Change as Submitted

Proponent : Robert Davidson, Davidson Code Concepts, LLC, representing SAFTI FIRST (rjd@davidsoncodeconcepts.com)

2015 International Building Code

Revise as follows:

708.6 Openings. Openings in a *fire partition* shall be protected in accordance with Section 716. The total area of the fire-protection-rated glazing in fire door side lights and transoms and in fire window assemblies shall not exceed 25 percent of the area of a common wall with any room.

Reason: The intent of this proposal is to address an anomaly in the current code language. For fire barriers there is a limitation on the total amount of openings permited of any type:

> "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."

In addition to that restriction the code also limits fire-protection-rated glazing to 1 hour or less fire-resistance-rated assemblies. And the amount of fire-protection-rated fire windows in a wall section is further restricted:

> "716.6.7 Interior fire window assemblies. Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1 hour in accordance with this section."
>
> > " 716.6.7.2 Area limitations. The total area of the glazing in fire-protection-rated window assemblies shall not exceed 25 percent of the area of a common wall with any room."

The combination of the overall opening limitation in Section 707.6 for fire barriers, and the fire window fire-protection-rated glazing protection requirements in Section 716.6.7 limit the total amount of fire-protection-rated glazing that can be utilized for the purpose of limiting the use of a product that allows radiant heat to go through the protected opening.

However, when you get to the Fire Partition portion of the code there is no overall limitation in openings. The fire-protected-rated fire windows still must comply with the limitations of Section 716.6.7 but what is lost is control of the amount of fire-protection-rated glazing used in fire door sidelights and transoms because there is no overall restriction on the amount of openings which would include the entire fire door assembly. This allows for additional fire-protection-rated glazing and radiant heat transfer beyond the amount restricted by Section 716.6.7.2 for fire windows.

The proposed language is intended to capture fire-protection-rated glazing in fire door sidelites and transoms for appllication of the restriction found at Section 716.6.7.2.

NFPA 80, "Standard for Fire Doors and Other Opening Protectives" includes background on radiant heat concerns in Annex I; the following is an extract of that information:

NFPA 80-2013

"I.1 Background. Fire windows were originally designed for protecting openings in exterior walls. In such applications, radiant heat transfer was not a significant consideration, since the main function of fire windows was to contain the flames within the building. However, where fire windows are used in interior partitions, users of this standard might need to consider radiant heat transfer during fire. Exiting through corridors and past fire windows could be compromised, and combustible materials on the unexposed side of fire windows could be ignited. The information that follows is a guide to the evaluation of radiant heat transfer through fire windows.

Recent revisions to this standard have permitted very large areas of fire protection–rated glazing materials to be used in interior partitions, limited only by the size of the test furnace. Also, recent technological advances in the glazing industry have compounded the problem of radiant heat transfer by making it possible to provide glazing materials with fire protection ratings of 60 minutes and 90 minutes. Historically, fire windows, including glass block, have been limited to a 45-minute rating by the standard fire test, NFPA257, Standard on Fire Test for Window and Glass Block Assemblies. This time limit was predicated on the failure of wired glass at approximately 1600°F (870°C). [1] Some manufacturers also have developed fire resistance–rated glazing assemblies that meet the requirements of a fire resistance–rated wall assembly (currently up to 2 hours). These glazing materials, however, do not transmit excessive radiant heat, since they are re-quired to limit the temperature rise on the unexposed face to 250°F (121°C). "

Cost Impact: Will increase the cost of construction
This proposal could create a minimal increase in the cost of construction by limiting the amount of fire-protection rated glazing in a given common wall in a room.

FS43-15 Part I : 708.6-DAVIDSON5293

Public Hearing Results

Part I

Committee Action: Disapproved

Committee Reason: The committee felt that the proposed language was redundant and already covered in Section 716.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Robert Davidson, Davidson Code concepts, LLC, representing SaftiFirst, Inc. (rjd@davidsoncodeconcepts.com) requests Approve as Submitted.

Commenter's Reason: This public comment is for approved as submitted. The committee's reason for disapproval does not address the issues raised in the original reason statement and floor testimony, i.e., why does the code treat fire barriers, fire partitions and smoke barriers differently concerning the total amount of openings permitted. All three types of barriers are intended to stop the passage of heat and smoke, how effective they are at doing that includes the permitted amount of openings. This is most important when utilizing glazed openings incorporating fire

protection-rated glazing materials which allow passage of radiant heat. NFPA 80 guides the user to consider radiant heat when using fire protection-rated glazing. The requirements of Section 716 address the total amount of fire windows permitted, however, glazing in sidelights and transoms associated with a fire door assembly are not covered by the limitation for fire window provisions because they are defined as part of the door assembly. This does not make technical sense because the code treats them as fire windows for testing purposes in Section 716.5.3.2 by requiring 20-minute door assemblies in smoke barriers and fire partition corridors to have the sidelight and transom tested to NFPA 257, the window test standard.

The total amount of fire protection-rated glazing permitted, including in fire door assemblies, is addressed in fire barriers by the total amount of openings being limited to a maximum aggregate width of 25 percent of the length of the wall. This includes fire door assemblies and fire windows.

The proposed changes target the fire protection-rated glazing in the sidelights and transoms only, adding language to limit of the total amount of glazed openings to the 25% of the area of a common wall with any room. The new language does not affect or create limits for the doors themselves. The proposed changes will correlate the amount of permitted fire protection-rated glazing in the three types of fire rated assemblies since the passage of radiant heat through the barriers presents the same level of hazard in all three cases and the glazing is being tested as fire window fire protection-rated glazing.

FS43-15 Part I

FS43-15 Part II

709.5, 716.6.7

Proposed Change as Submitted

Proponent : Robert Davidson, Davidson Code Concepts, LLC, representing SAFTI FIRST (rjd@davidsoncodeconcepts.com)

2015 International Building Code

Revise as follows:

709.5 Openings. Openings in a *smoke barrier* shall be protected in accordance with Section 716. The total area of the fire-protection-rated glazing in fire door side lights and transoms and in fire window assemblies shall not exceed 25 percent of the area of a common wall with any room.

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 $^{3}/_{4}$ 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.
2. In Group I-1 Condition 2, Group I-2 and *ambulatory care facilities*, horizontal sliding doors installed in accordance with Section 1010.1.4.3 and protected in accordance with Section 716.

716.6.7 Interior fire window assemblies. Fire-protection-rated glazing used in *fire window assemblies* located in *fire partitions, smoke barriers* and *fire barriers* shall be limited to use in assemblies with a maximum *fire-resistance rating* of 1 hour in accordance with this section.

Reason: The intent of this proposal is to address an anomaly in the current code language. For fire barriers there is a limitation on the total amount of openings permited of any type:

> "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."

In addition to that restriction the code also limits fire-protection-rated glazing to 1 hour or less fire-resistance-rated assemblies. And the amount of fire-protection-rated fire windows in a wall section is further restricted:

> "716.6.7 Interior fire window assemblies. Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1 hour in

accordance with this section."

" 716.6.7.2 Area limitations. The total area of the glazing in fire-protection-rated window assemblies shall not exceed 25 percent of the area of a common wall with any room."

The combination of the overall opening limitation in Section 707.6 for fire barriers, and the fire window fire-protection-rated glazing protection requirements in Section 716.6.7 limit the total amount of fire-protection-rated glazing that can be utilized for the purpose of limiting the use of a product that allows radiant heat to go through the protected opening.

However, when you get to the Smoke Barrier portion of the code there is no overall limitation in openings. The fire-protected-rated fire windows still must comply with the limitations of Section 716.6.7 but what is lost is control of the amount of fire-protection-rated glazing used in fire door sidelights and transoms because there is no overall restriction on the amount of openings which would include the entire fire door assembly. This allows for additional fire-protection-rated glazing and radiant heat transfer beyond the amount restricted by Section 716.6.7.2 for fire windows.

The proposed language at 709.5 and 716.6.7 is intended to capture fire-protection-rated glazing in fire door sidelites and transoms for appllication of the restriction found at Section 716.6.7.2 and clarify the fire window application to smoke barriers.

NFPA 80, "Standard for Fire Doors and Other Opening Protectives" includes background on radiant heat concerns in Annex I; the following is an extract of that information:

NFPA 80-2013

"I.1 Background. Fire windows were originally designed for protecting openings in exterior walls. In such applications, radiant heat transfer was not a significant consideration, since the main function of fire windows was to contain the flames within the building. However, where fire windows are used in interior partitions, users of this standard might need to consider radiant heat transfer during fire. Exiting through corridors and past fire windows could be compromised, and combustible materials on the unexposed side of fire windows could be ignited. The information that follows is a guide to the evaluation of radiant heat transfer through fire windows.

Recent revisions to this standard have permitted very large areas of fire protection–rated glazing materials to be used in interior partitions, limited only by the size of the test furnace. Also, recent technological advances in the glazing industry have compounded the problem of radiant heat transfer by making it possible to provide glazing materials with fire protection ratings of 60 minutes and 90 minutes. Historically, fire windows, including glass block, have been limited to a 45-minute rating by the standard fire test, NFPA257, Standard on Fire Test for Window and Glass Block Assemblies. This time limit was predicated on the failure of wired glass at approximately 1600°F (870°C). [1] Some manufacturers also have developed fire resistance–rated glazing assemblies that meet the requirements of a fire resistance–rated wall assembly (currently up to 2 hours). These glazing materials, however, do not transmit excessive radiant heat, since they are re-quired to limit the temperature rise on the unexposed face to 250°F (121°C). "

Cost Impact: Will increase the cost of construction
This proposal could create a minimal increase in the cost of construction by limiting the amount of fire-protection rated glazing in a given common wall in a room.

FS43-15 Part II : 709.5-DAVIDSON5296

Public Hearing Results

Part II

Committee Action: Disapproved

Committee Reason: The committee felt that the protection provisions provided in Section 716 adequately covered the concerns brought up by the proponent.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Robert Davidson, Davidson Code Concepts, LLC, representing SaftiFirst, Inc. (rjd@davidsoncodeconcepts.com) requests Approve as Submitted.

Commenter's Reason: This public comment is for approved as submitted. The committee's reason for disapproval does not address the issues raised in the original reason statement and floor testimony, i.e., why does the code treat fire barriers, fire partitions and smoke barriers differently concerning the total amount of openings permitted. All three types of barriers are intended to stop the passage of heat and smoke, how effective they are at doing that includes the permitted amount of openings. This is most important when utilizing glazed openings incorporating fire protection-rated glazing materials which allow passage of radiant heat. NFPA 80 guides the user to consider radiant heat when using fire protection-rated glazing. The requirements of Section 716 address the total amount of fire windows permitted, however, glazing in sidelights and transoms associated with a fire door assembly are not covered by the limitation for fire window provisions because they are defined as part of the door assembly. This does not make technical sense because the code treats them as fire windows for testing purposes in Section 716.5.3.2 by requiring 20-minute door assemblies in smoke barriers and fire partition corridors to have the sidelight and transom tested to NFPA 257, the window test standard.

The total amount of fire protection-rated glazing permitted, including in fire door assemblies, is addressed in fire barriers by the total amount of openings being limited to a maximum aggregate width of 25 percent of the length of the wall. This includes fire door assemblies and fire windows.

The proposed changes target the fire protection-rated glazing in the sidelights and transoms only, adding language to limit of the total amount of glazed openings to the 25% of the area of a common wall with any room. The new language does not affect or create limits for the doors themselves. The proposed changes will correlate the amount of permitted fire protection-rated glazing in the three types of fire rated assemblies since the passage of radiant heat through the barriers presents the same level of hazard in all three cases and the glazing is being tested as fire window fire protection-rated glazing.

FS43-15 Part II

FS46-15
712.1.10.1

Proposed Change as Submitted

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

2015 International Building Code

Revise as follows:

712.1.10.1 Automobile ramps. Vertical openings for automobile ramps in~~ open and enclosed~~ parking garages shall be permitted where constructed in accordance with Sections 406.5 and 406.6~~, respectively~~.

Reason: The current language in the code is redundant and confusing. The new language allows openings that may be used for other purposes including occupant mobility.

Cost Impact: Will not increase the cost of construction
This change should reduce the cost of construction as it will clarify how openings are permitted in floors of parking garages.

FS46-15 : 712.1.10.1-COLLINS4479

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee agreed that the current language in the code is redundant and confusing and that the new language allows openings that may be used for other purposes including occupant mobility.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : David Collins, representing The American Institute of Architects (dcollins@preview-group.com) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

402.4.1.3 Parking garage. The *building area* and *building height* of any parking garage~~, open or enclosed~~, shall be based on the type of construction as required by Sections 406.5 and 406.6, respectively.

402.4.2.3 Parking garages. An attached garage for the storage of passenger vehicles having a capacity of not more than nine persons and *open parking garages* shall be considered as a separate building where it is

separated from the *covered or open mall building* or *anchor building* by not less than 2-hour *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both.

Parking garages~~, open or enclosed,~~ which are separated from *covered mall buildings*, *open mall buildings* or *anchor buildings,* shall comply with the provisions of Table 602.

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

704.9 Impact protection. Where the fire protective covering of a structural member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire protective covering shall be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor.

> **Exception:** Corner protection is not required on concrete columns in ~~open or enclosed~~ parking garages.

712.1.10 Parking garages. Vertical openings in parking garages for automobile ramps, elevators and duct systems shall comply with Section 712.1.10.1, 712.1.10.2 or 712.1.10.3, as applicable.

712.1.10.1 Automobile ramps. Vertical openings for automobile ramps in ~~open and enclosed~~ parking garages shall be permitted where constructed in accordance with Sections 406.5 and 406.6, respectively.

712.1.10.2 Elevators. Vertical openings for elevator hoistways in ~~open or enclosed~~ parking garages that serve only the parking garage, and complying with Sections 406.5 and 406.6, respectively, shall be permitted.

712.1.10.3 Duct systems. Vertical openings for mechanical exhaust or supply duct systems in ~~open or enclosed~~ parking garages complying with Sections 406.5 and 406.6, respectively, shall be permitted to be unenclosed where such duct system is contained within and serves only the parking garage.

715.1 General. 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. *Fire-resistant joint systems* shall be tested in accordance with Section 715.3.

> **Exception:** *Fire-resistant joint systems* shall not be required for joints in all of 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 ~~open and enclosed~~ parking garages or structures constructed in accordance with

Sections 406.5 and 406.6, ~~respectively.~~

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 E 119 or UL 263.

722.2.2.1 Reinforced and prestressed floors and roofs. The minimum thicknesses of reinforced and prestressed concrete floor or roof slabs for *fire-resistance ratings* of 1 hour to 4 hours are shown in Table 722.2.2.1.

> **Exception:** Minimum thickness shall not be required for floors and ramps within ~~open and enclosed~~ parking garages constructed in accordance with Sections 406.5 and 406.6, ~~respectively~~.

[P] 2902.3 Employee and public toilet facilities. Customers, patrons and visitors shall be provided with public toilet facilities in structures and tenant spaces intended for public utilization. The number of plumbing fixtures located within the required toilet facilities shall be provided in accordance with Section 2902.1 for all users. Employees shall be provided with toilet facilities in all occupancies. Employee toilet facilities shall be either separate or combined employee and public toilet facilities.

> **Exception:** Public toilet facilities shall not be required in:
>
> 1. ~~Open or enclosed~~ Parking garages where there are no parking attendants.
> 2. Structures and tenant spaces intended for quick transactions, including takeout, pickup and drop-off, having a public access area less than or equal to 300 square feet (28 m^2).

Commenter's Reason: Reason statement: The original FS 46-15 proposal is an editorial change, cleaning up language referring to *parking garages* that was leftover from previous code changes. The code originally stated just "*open*" parking garages before "*enclosed*" was later added. For these sections of the code, those two distinctions to "(public) *parking garages*" are no longer needed.

FS46-15

FS49-15
713.8.2 (New)

Proposed Change as Submitted

Proponent : Matthew Davy, representing Arup (matt.davy@arup.com)

2015 International Building Code

713.8 Penetrations. Penetrations in a shaft enclosure shall be protected in accordance with Section 714 as required for *fire barriers*. Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a shaft enclosure.

713.8.1 Prohibited penetrations. Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

Add new text as follows:

713.8.2 Membrane penetrations Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.3.2.

Reason: The purpose of Section 713.8 and 713.8.1 is to limit through penetrations into a shaft enclosure; however, membrane penetrations should be permitted on the outside of the shaft enclosure. As currently written, an electrical box is not permitted on the outside of the shaft enclosure. This section needs to clarify the intent of Section 713.8.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction since it will allow membrane penetrations in shaft enclosures without the need for additional construction/material on the outside of the shaft enclosure. Also, it increases net area for the building.

FS49-15 : 713.8.2 (New)-DAVY5357

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee felt this was a good change based on the fact that these membrane penetrations were already allowed in exit passageways and shafts.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Maureen Traxler, representing Seattle Dept of Planning & Development (maureen.traxler@seattle.gov) requests

Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

713.8.1 Prohibited penetrations. Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

> **Exception:** Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.3.2.

~~**713.8.2 Membrane penetrations** Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.3.2.~~

Commenter's Reason: This is an editorial comment that does not change the meaning of the original proposal. The proposed new Section 713.8.2 functions as an exception to the prohibition on penetrations in existing Section 713.8.1.

FS49-15

FS55-15

714.2 (New)

Proposed Change as Submitted

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

2015 International Building Code

Add new text as follows:

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

Reason: The intent of the paragraph is to require that all listed systems be installed in accordance with the listing critieria (including manufacturer's instructions). The manufacturer's instructions provide additional details that are not commonly identified in the listing criteria, including environmental conditions and tooling.

Cost Impact: Will not increase the cost of construction
Listed systems should already be installed in accordance with the manufacturer's installation instructions.

FS55-15 : 714.2 (New)-KOFFEL5417

Public Hearing Results

Committee Action: Approved as Modified

Modification:

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

Committee Reason: The committee agreed that these listed systems needed to be installed in accordance with the manufacturer's installation instructions. The modification ensures this requirement is applicable to all types of listed penetration systems.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Jeffrey Shapiro, representing National Multifamily Housing Council (jeff.shapiro@intlcodeconsultants.com) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

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

Commenter's Reason: The word "securely" is vague and subjective. Since the section will require installation in accordance with the manufacturer's instructions, the subject of mounting is adequately covered without the need to add subjective text to the IBC.

FS55-15

FS61-15
714.4.1.2

Proposed Change as Submitted

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

2015 International Building Code

Revise as follows:

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approvedthrough-penetration firestop system* installed and tested in accordance with ASTM E 814 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~~ below a ~~horizontal assembly~~ floor do not require a T rating.
3. Floor penetrations of maximum 4-inch (102 mm) nominal diameter penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.

Reason: This proposed change clarifies and potentially expands (depending on interpretation) the existing exception for floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a horizontal assembly. The existing language uses the term "horizontal assembly", which is a defined term in the IBC and denotes a fire resistance-rated floor or roof assembly. If the concealed space is part of a floor/ceiling assembly, which is a horizontal assembly that includes the use of a fire-rated ceiling membrane, then the penetration would be concealed behind a fire rated material. If the concealed space referred to in exception No. 2 is simply a floor assembly, which does not incorporate the use of a fire rated membrane, then a penetration that would be concealed would be above a non-rated ceiling. In either case, the horizontal concealed space of a floor/ceiling assembly (with rated membrane) or of a floor assembly (with non-rated ceiling) is comparable in construction and protection, to that of a wall cavity in the current exception for floor penetrations contained and located within the cavity of a wall above the floor or below the floor. In the wall exception (714.4.1.2, Exception 1), the wall concealing the penetration may be either non-rated or fire rated. Thus, the level of protection that the proposed wording would make clear is comparable to that provided in the current exception for penetrations concealed within a wall, and is consistent with the proponent's intent in FS69-09/10 that added Exception No.2 to the IBC.
Floor drains, tub drains and shower drains would never be located such that the pipe penetrating the floor would be within the cavity of a wall. Thus, those drains would not be able to use the existing T-rating exception for walls (Exception No. 1). Many jurisdictions are already interpreting Eception No, 2 to apply the logic of the existing exception for walls, to include the situation of penetrating items concealed above a a non-rated ceiling, as there is some intuitive recognition that the situations really are analogous.

Cost Impact: Will not increase the cost of construction
The proposal expands the exception to include fire-resistance rated floors in which the membrane is not part of the rating.

FS61-15 : 714.4.1.2-CRIMI4303

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that limiting exception 2 to floors inappropriately excludes roof penetrations.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Tony Crimi, representing International Firestop Council requests Approve as Submitted.

Commenter's Reason: The committee reason for Disapproval relates to the fact that this exception is limited to penetrations of floor assemblies, and does not include roofs.
However, penetrations through the top of a roof assembly (not the membrane forming part of a roof assembly) do not normally require a penetration firestop at all. Consequently, it would not be necessary to create an exception to the need for a through-penetration firestop system T-rating for an assembly that does not require firestopping to begin with. This code change is intended to deal only with floor penetrations, so the fact that it does not deal with roof penetrations is not relevant.

Floor drains, tub drains and shower drains would never be located such that the pipe penetrating the floor would be within the cavity of a wall. Thus, those drains would not be able to use the existing T-rating exception for walls (Exception No. 1). Many jurisdictions are already interpreting Eception No, 2 to apply the logic of the existing exception for walls, to include the situation of penetrating items concealed above a a non-rated ceiling, as there is some intuitive recognition that the situations really are analogous.

This proposed change clarifies and potentially expands (depending on interpretation) the existing exception for floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a horizontal assembly. The existing language uses the term "horizontal assembly", which is a defined term in the IBC and denotes a fire resistance-rated floor or roof assembly. If the concealed space is part of a floor/ceiling assembly, which is a horizontal assembly that includes the use of a fire-rated ceiling membrane, then the penetration would be concealed behind a fire rated material. If the concealed space referred to in exception No. 2 is simply a floor assembly, which does not incorporate the use of a fire rated membrane, then a penetration that would be concealed would be above a non-rated ceiling. In either case, the horizontal concealed space of a floor/ceiling assembly (with rated membrane) or of a floor assembly (with non-rated ceiling) is comparable in construction and protection, to that of a wall cavity in the current exception for floor penetrations contained and located within the cavity of a wall above the floor or below the floor. In the wall exception (714.4.1.2, Exception 1), the wall concealing the penetration may be either non-rated or fire rated. Thus, the level of protection that the proposed wording would make clear is comparable to that

provided in the current exception for penetrations concealed within a wall, and is consistent with the proponent's intent in FS69-09/10 that added Exception No.2 to the IBC.

FS61-15

FS63-15
714.4.1.2

Proposed Change as Submitted

Proponent : Jonathan Roberts, UL LLC, representing UL LLC (jonathan.roberts@ul.com)

2015 International Building Code

Revise as follows:

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approvedthrough-penetration firestop system* installed and tested in accordance with ASTM E 814 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 cable or 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.

Reason: In its current form, Exception 3 of Section 714.4.1.2 is incomplete in that it does not specify what is penetrating the floor into the top of the switchgear. The reason statement that was submitted with FS75-12, which led to Exception 3, references "metal EMT or conduit". However, these devices are also wired with cable. As such, this proposal suggests wiring methods which reflect all these options.

Cost Impact: Will not increase the cost of construction
It simply clarifies the current requirements.

FS63-15 : 714.4.1.2-ROBERTS4043

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on the following: No maximum diameter is given for the cable; and no justification has been provided for the metal conduit.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Marilyn Williams, National Electrical Manufacturers Association, representing National Electrical Manufacturers Association requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approvedthrough-penetration firestop system* installed and tested in accordance with ASTM E 814 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 ~~cable or~~ 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.

Commenter's Reason: The Committee correctly disapproved this proposal because it was much too broad as written and included "cables" without any substantiation or clarification as to what types of cables. The origina proposal (FS75-12) that was acccepted to create Exception #3 specifically referenced "metallic EMT or conduit" in the reason statement, but the final language omitted this critical provision. This comment corrects the oversight and clarifies the application of the exception.

FS63-15

FS64-15
714.4.1.2

Proposed Change as Submitted

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

2015 International Building Code

Revise as follows:

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approvedthrough-penetration firestop system* installed and tested in accordance with ASTM E 814 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 penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.
4. <u>Floor penetrations in the parking garages do not require F and T ratings</u>

Reason: It makes no sense to have a large unprotected openings between floors such as vehicle ramps and then a small floor opening next to such ramp to have F and T ratings!!

Cost Impact: Will not increase the cost of construction
This code change will decrease the cost of construction. In order to effectively compartmentalize a fire, a floor must prevent the passage of smoke and flame and also prevent the temperature on the non-fire side from rising high enough to ignite materials stored on non-fire side. To achieve these requirements, certain listed/approved fire stopping assemblies need to be installed; thus the added cost. By adopting this new exception, that requirements goes away and with it the added cost of fire stopping assemblies.

FS64-15 : 714.4.1.2-MAIEL4340

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on the following: There is no limitation on the number of floor penetrations there can be; This should apply only to open parking garages; and this should be rewritten as an exception to the testing rather than to the F and T rating, which is what the testing determines.

Individual Consideration Agenda

Public Comment 1:

Proponent : Homer Maiel, PE, CBO, representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay) (hmaiel@gmail.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approvedthrough-penetration firestop system* installed and tested in accordance with ASTM E 814 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 penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.
4. Floor penetrations in the <u>open</u> parking garages do not require F and T ratings

Commenter's Reason: In Memphis, the committee suggested that this exception should only apply to open parking garages. That concern is addressed in this modification. However, committee's comment on limitations of openings has no basis. As mentioned in the reason section for the original proposal, there is no limit on the floor openings at the auto ramps. Also Section 1019.3, Condition 6, exempts exit access stairways and ramps from having any enclosures in open parking garages. Sections 712.1.10.2 and 712.1.10.3, aslo exempt elevator openings and duct systems from having any enclosure when they are in open and enclosed parking garages. Additionaly, under Section 715.1, Exception 5, fire-resistant joint systems are not required for floors and ramps within open and enclosed parking gargages. So one can have a seismic joint running from one end of the slab to next, penetrated vertically through the slab, with no protection, but a 4-inch pipe penetration should have an F and T rating?

FS64-15

FS65-15
714.4.1.2

Proposed Change as Submitted

Proponent : John Valiulis, Hilti, Inc., representing Hilti, Inc. (john.valiulis@hilti.com)

2015 International Building Code

Revise as follows:

714.4.1.2 Through-penetration firestop system. *Through penetrations* shall be protected by an *approvedthrough-penetration firestop system* installed and tested in accordance with ASTM E 814 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 penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.
4. Floor penetrations of a concrete floor by steel, ferrous, or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, where the area of the opening through the floor does not exceed 144 square inches (92 900 mm^2) if the penetrating item penetrates more than a single floor, do not require a T-rating.

Reason: Overview

This code change aims to rectify the significant inconsistency in performance requirements for floor penetrations of fire rated concrete floor assemblies covered by different code sections. The proposed exception would set equal heat transfer performance expectations for the different code-permitted options for sealing some specific through-penetrations of a concrete floor.

Code requirements when the penetration is firestopped

The most common code-compliant way of firestopping a though-penetration of a fire resistance rated floor assembly is to protect the penetration in accordance with a tested through-penetration firestop system, as detailed in 714.4.1.2. Using a tested firestop system will require that the system have an F-rating equal to the rating of the penetrated assembly. The F-rating is a measure of the firestop system's ability to prevent fire passage. In addition, a floor penetration firestop system may also require a T-rating equal to the fire rating of the assembly, unless one of the three T-rating exceptions are met, as enumerated in 714.4.1.2, shown above. The T-rating is a measure of the firestop system's ability to limit temperature rise on the non-fire side of the penetration.

Code requirements when the penetration is sealed with concrete/grout/mortar

The IBC and the legacy codes have allowed an exception to the requirement for an

approved, tested firestop system, under certain strict limitations, as covered in 714.4.1 Exception No. 2. Using Exception No. 2, the prescriptive code allows filling the annular space with full-depth concrete, grout, or mortar, if the penetration meets all of these conditions:
a) Is a steel, ferrous, or copper conduit, pipe, tube or vent
b) Has a maximum 6 inch nominal diameter
c) The area of the opening through the floor does not exceed 144 square inches if the penetrating item penetrates more than a single floor.

The level of fire safety provided by 714.4.1 Exception 2 is found to be lacking by some in the fire protection community, but the fact remains that it is in the 2015 IBC, was in the legacy codes, and has been used for several decades. This code change proposal acknowledges the continued existence of that exception, without commenting on its merits or lack thereof, and aims to make other sections of the code, namely 714.4.1.2, consistent with this exception, assuming that this exception remains in the Code.

Measured performance of penetrations sealed with concrete/grout/mortar

Using 714.4.1 Exception No.2, there is no requirement for the penetration sealing method (concrete, grout or mortar) to restrict the temperature rise of the penetrating item on the non-fire side to less than 325F (i.e. no requirement for a T-rating). A steel or copper penetrating item will in fact get hot quite fast on the non-fire side (above the floor) if sealed with the concrete/grout/mortar solution. A fire test conducted by UL in 2005 (see Reference No. 1) measured the penetrant temperature on the non-fire side (i.e. above the floor) for three separate floor penetrations, sealed with 1) hydraulic cement, 2) grout and 3) mortar. The penetrating items and hole sizes where within the parameters allowed by 714.4.1 Exception No. 2. The fire test exposure was the standard ASTM E119 time-temperature curve, which is the same time-temperature curve used for other required fire resistance ratings required within the IBC. The test demonstrated that for all three penetrations tested, the T-rating limit of 325F temperature rise was exceeded within 17 minutes. Thus, the penetrations sealed with concrete, grout or mortar would be 43 minutes short of achieving even a minimal 1-hour T-rating. This is inconsistent with 714.4.1.2, which requires an approved firestop system to have a T-rating of at least 1 hour, and not less than the required rating of the floor penetrated.

Making the options more consistent in their performance demands

It is this inconsistency that this present code change aims to correct. Under conditions where the Code does not require a penetrating item to maintain any specific maximum temperature rise (T-rating), that same performance requirement (or lack of requirement) should be maintained regardless of the methodology chosen to accomplish the penetration seal. It is not logical to require a tested and listed firestop system to restrict temperature rise to 325F on the non-fire side for 4 times the amount of time that this same temperature rise can be limited by the penetration sealed with concrete grout or mortar. The performance criteria required by any one of a number of code-accepted alternatives should be equivalent, not divergent by a factor of four as in this instance.

Thus, for the very specific and limited applications where the code allows the concrete, grout or mortar solution (i.e. 6 inch copper or steel penetrant, with maximum hole size 144 sq. in. where penetrating item penetrates more than one floor), the T-rating should not be required when a tested and listed firestop system is used. The proposed new exception would not diminish the tested and proven ability of the firestop system to resist the passage of fire, as expressed by the F-rating, which still must equal the fire resistance rating of the penetrated assembly.

The words used for the proposed new exception are the same words used in 714.4.1 Exception No. 2 to describe the penetrating items that fall under that exception. This provides consistency not only of intent but also of verbiage between the two methodologies.

Establishing consistent temperature transmittal (T-rating) performance requirements between the concrete/grout/mortar solution, and the firestop solution, will have the

advantage of allowing design and installation professionals to make a better, objective choice between the options. This change allows non-fire performance objectives of the penetration and fire safety to be considered without any other bias. For example, firestop systems can allow for movement of the penetrating item (depending on the firestop system selected), can provide a hermetic, water-tight seal, and would prevent the corrosion issues that are known to exist (depending on pipe and concrete composition) when a metallic pipe is cemented into a floor.

Bibliography: 1. "Fact-finding investigation of through-penetrations sealed with hydraulic cement, grout , or mortar", Underwriters' Laboratories, File R22102, Project 05CA06187, 2005

Cost Impact: Will not increase the cost of construction
The proposed new exception does not add any new requirements. Rather, under the specified conditions, it makes the option of using a tested and listed solution a more practical and therefore likely less expensive option that would be consistent with the level of heat transfer (T-rating) allowed for the prescriptive solution specified in 714.4.1 Exception 2.

FS65-15 : 714.4.1.2-VALIULIS5542

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on the following: Basing the proposal on an alternative to a code recognized method that has questionable temperature rise performance (steel pipe) is not appropriate; the language should more closely match exception number 2 of Section 714.4.1.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Edward Goldhammer, Hilti, representing Hilti (edward.goldhammer@hilti.com) requests Approve as Submitted.

Commenter's Reason: Approve as submitted based on the proponents reason statement. In addition, the committee disapproved the code change proposal based on two concerns addressed as follows:

1. *The committee noted the language should more closely match the language from Section 714.4.1 exception No. 2.*
   Response: The proponent agrees the language should closely match, that is why the language as stated in the original proposal was taken directly from Section 714.4.1 exception No. 2. There is no deviation in type of floor, penetrant, penetrant maximum size, or maximum area of opening. A copy of the language from Section 714.4.1 Exception No. 2 is noted as reference. "*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 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 the area of the opening through each floor does not exceed 144 square inches (92 900 mm2).*" It is important to match the language of

this exception as this proposal is intended to establish consistent temperature transmittal (T-rating) performance requirements between the concrete/grout/mortar solution and the firestop solution. This provides consistency not only of intent but also of verbiage between the two methodologies.

2. *The committee suggested it was not appropriate to base a proposal on an alternative to a code recognized method that has questionable temperature rise performance (steel pipe).*
   Response: The prescriptive language allows the user a very specific application exception using a specific type of penetrant, penetrant size, and size of opening in a concrete floor. This methodology and code language has been used for several decades in both the legacy codes and IBC. The committee re-affirmed this methodology by disapproving FS 60-15 which would have only allowed the exception to occur within the cavity of a wall. There is nothing submitted that is suggesting a reduction in fire safety. The intended proposal is to allow a firestopping solution consistent in the performance demands of the concrete/grout/mortar exception.

FS65-15

FS68-15
715.1

Proposed Change as Submitted

Proponent : Paul Coats, PE CBO, representing American Wood Council (pcoats@awc.org)

2015 International Building Code

Revise as follows:

715.1 General. Where *joints* are provided to accommodate openings that are created due to building tolerances, or are designed to allow independent movement of the building in any plane caused by thermal, seismic, wind, or any other loading, they shall be protected in accordance with this section. 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. *Fire-resistant joint systems* shall be tested in accordance with Section 715.3.

Exception: *Fire-resistant joint systems* shall not be required for joints in all of 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 open and enclosed parking garages or structures constructed in accordance with Sections 406.5 and 406.6, respectively.
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 E 119 or UL 263.

Reason: This proposal is editorial in nature and makes no change to the current requirements. The proposed wording comes directly from the current definition of Joint in Chapter 2: "Joint. The opening in or between adjacent assemblies that is created due to building tolerances, or is designed to allow independent movement of the building in any plan caused by thermal, seismic, wind or any other loading." Inserting the definition of "joint" here will preclude confusion with other common uses of the term. The purpose of Section 715 is to maintain fire resistance in and between assemblies where spaces are intentionally provided to allow movement of building elements. Where such space is not needed nor provided, such as in platform frame construction, there is no requirement for a fire resistance rated joint system between fire resistance rated assemblies. The proposed wording will clarify the application.

Additional information about this proposal may be posted at

Cost Impact: Will not increase the cost of construction
This will have no impact on the cost of construction.The cost impact of this proposal will be zero since it is a clarification of current requirements and is editorial in nature.

FS68-15 : 715.1-COATS4011

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that it was confusing and redundant to place a definition within a code section.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Paul Coats, PE CBO, representing American Wood Council (pcoats@awc.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

715.1 General. Where~~*joints* are provided to accommodate openings that~~ spaces in or between fire resistance rated assemblies are created due to building tolerances, or are ~~designed~~ provided in the design to allow independent movement of the building in any plane caused by thermal, seismic, wind, or any other loading, they shall be considered joints as defined in Chapter 2 and protected in accordance with this section. 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. *Fire-resistant joint systems* shall be tested in accordance with Section 715.3.

Exception: *Fire-resistant joint systems* shall not be required for joints in all of 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 open and enclosed parking garages or structures constructed in accordance with

Sections 406.5 and 406.6, respectively.

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 E 119 or UL 263.

Commenter's Reason: The modification more clearly reflects the intent of the proposal and the original intent of the existing fire resistance rated joint provisions. It draws on the Chapter 2 definition that is applicable to fire resistance rated joints, without repeating it. As with the original proposal, the current code text remains unchanged except for the addition of the first sentence to clarify the intent.
The change is critical because current text is sometimes interpreted to require a fire resistance rated joint at all intersections of rated assemblies, regardless of design. Structural connections that are tight to each other and do not permit movement, such as typical wall/floor intersections in typical platform construction, do not require tested fire resistance rated joint systems.

FS68-15

FS81-15

Table 716.5, 716.5.5, 716.5.5.1, 716.5.8.1.2

Proposed Change as Submitted

Proponent : Tom Zaremba, representing Alliance of Fire Rated Glazing Manufacturers (tzaremba@ralaw.com)

2015 International Building Code

Revise as follows:

TABLE 716.5
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[b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[d]	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 b	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[a]	See Note b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-T-90 or D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1^1/_2$	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-T-90 or D-H-W-90	Not Permitted	$1^1/_2$	Not Permitted	W-90
Enclosures for shafts, interior exit stairways and interior exit ramps.	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-90 or D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire	4	3	100 sq. in.	≤100 sq. in. = D-H-180 >	Not Permitted	4	Not Permitted	W-240

				100 sq. in.=D-H-W-240				
walls[e]	3	3[a]	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 forshafts,exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1	1	100 sq. in.[c]	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-T-60or 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	$^3/_4$		D-H	
Fire partitions: Corridor walls	1	$^1/_3$[b]	Maximum size tested	D-20	$^3/_4$[b]		D-H-OH-45	
	0.5	$^1/_3$[b]	Maximum size tested	D-20	$^1/_3$		D-H-OH-20	
Other fire partitions	1	$^3/_4$	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	

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING	MINIMUM FIRE DOOR AND FIRE	DOOR VISION PANEL SIZE[b]	FIRE-RATED GLAZING MARKING DOOR	MINIMUM SIDELIGHT/ TRANSOM ASSEMBLY RATING (hours)	FIRE-RATED GLAZING MARKING SIDELIGHT/TRANSOM PANEL

	(hours)	SHUTTER ASSEMBLY RATING (hours)		VISION PANEL[d]				
					Fire protection	Fire resistance	Fire protection	Fire resistance
Exterior walls	3	$1^1/_2$	100 sq. in.[b]	≤100 sq. in. = D-H-90 >100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2	$1^1/_2$	100 sq. in.[b]	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
					Fire protection			
	1	$^3/_4$	Maximum size tested	D-H-45	$^3/_4$		D-H-45	
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. 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.

b. Fire-resistance-rated glazing tested to ASTM E 119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.

c. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.

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

e. See Section 716.5.8.1.2.1.

716.5.5 Doors in interior exit stairways and ramps and exit passageways. *Fire door* assemblies in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure.

> ~~**Exception:** The maximum transmitted temperature rise is not required in buildings equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.~~

716.5.5.1 Glazing in doors. ~~Fire-protection-rated~~
Fire rated glazing ~~in excess of 100 square inches (0.065 m²) is not permitted. Fire-resistance-rated glazing in excess of 100 square inches (0.065 m²)~~ shall be permitted in ~~door~~ *fire doors in accordance with Table 716.5*. Listed ~~fire-resistance-rated~~ fire rated glazing in a fire door shall have a maximum transmitted temperature rise in accordance with Section 716.5.5 when the fire door is tested in accordance with NFPA 252, UL 10B or UL 10C.

Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

716.5.8.1.2 Fire-protection-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1 hour. Fire-protection-rated glazing shall be prohibited in *fire walls* and *fire barriers* except in temperature rise doors in

fire walls and fire barriers rated 2 hours or less that comply with Section 716.5.5.1, or as provided in Sections 716.5.8.1.2.1 and 716.5.8.1.2.2.

Reason: The code currently imposes unwarranted barriers to the use of fire-protection rated glazings in sizes greater than 100 sq.in. that, while not fire-resistance rated, are capable of blocking the passage of heat to enable a fire door tested to NFPA 252 (or UL 10B or UL 10C) to meet the 450º F temperature rise limitation found in Section 716.5.5 ("temperature rise doors").
The modifications proposed here are intended to permit the use of fire-protection rated glazing in sizes larger than 100 sq.in. if, and only if, the fire doors in which it is installed meets the 450º F temperature rise limitation found in Section 716.5.5.

The term "fire-rated glazing" is defined in Ch. 2 of the IBC to include both fire-protection rated and fire-resistance rated glazing. The proposed modification to Section 716.5.5.1, takes advantage of that definition to, simply, allow any "fire-rated glazing," whether fire-protection rated or fire-resistance rated, in temperature rise doors so long as it complies with the temperature rise restrictions of Section 716.5.5.

Consistent with this proposed change to Section 716.5.5.1, Table 716.5 is modified to permit complying fire-protection rated glazings found in temperature rise doors to be marked "D-H-T-xxx" (along with fire-resistance rated glazings found in temperature rise doors that are already being marked "D-H-W-xxx"). Likewise, Section 716.5.8.1.2 is also modified to accomodate the use of fire-protection rated glazings in temperature rise doors found in fire walls and fire barriers rated 2 hours or less.

Finally, the sprinklered building "exception" to Section 716.5.5 is moved to the end of the section, simply, to clarify that it applies to all of Section 716.5.5, including Section 716.5.5.1.

Cost Impact: Will not increase the cost of construction
Currently, only fire-resistance rated glazings are permitted in sizes greater than 100 sq.in. in temperature rise doors. Fire-resistance rated glazing is heavier and more expensive than fire-protection rated glazing. Allowing properly tested, listed and labeled fire-protection rated glazings in temperature rise doors will reduce the weight and the cost of such doors. Allowing fire-protection rated glazings in these applications will reduce, rather than increase, the cost of construction.

FS81-15 : T716.5.5-ZAREMBA4757

Public Hearing Results

Committee Action: **Disapproved**

Committee Reason: The committee disapproved this item based on the following: No technical justification provided dealing with radiant heat transfer of fire-protection-rated glazing in these door assemblies; and the testing required has no thermocouple requirements for the unexposed surface.

Assembly Action **:** None

Individual Consideration Agenda

Public Comment 1:

Proponent : **Tom Zaremba, representing Alliance of Primary Fire Rated Glazing Manufacturers (tzaremba@ralaw.com) requests Approve as Modified by this Public Comment.**

Modify as Follows:

2015 International Building Code

716.5.5 Doors in interior exit stairways and ramps and exit passageways. *Fire door* assemblies in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure

Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Commenter's Reason: FS81-15 should be approved as modified by this Public Comment.
In support of the proposed modification:

In the original proposal, the exception to Section 716.5.5 was deleted and relocated to follow Section 716.5.5.1. The ***ONLY*** modification being proposed in this public comment is to restore the excepion to Section 716.5.5.1 that was deleted from the original proposal. The sole purpose of the modification is to clarify the applicability of the exception to both Sections 716.5.5 and 716.5.5.1.

In support of the Public Comment:

Currently, in temperature rise doors required by IBC Section 716.5.5, if the glazing exceeds a 100 sq.in. view panel, ***only fire-resistance glazings*** are allowed pursuant to IBC Section 716.5.5.1. The intent of FS81-15 is to permit the option of using ***either*** fire-resistance rated glazings, ***or***, fire-protection rated glazings that are allowed, listed and labeled for use in such temperature rise doors.

The Committee gave two reasons for disapproving FS81-15. Both are demonstrably wrong.

The first reason advanced by the Committee is a lack of "technical justification ... dealing with "radiant heat transfer of fire-protection-rated glazing in these door assemblies...." This is, simply, wrong. Strong technical justification has been presented in support of FS81-15.

Strong technical justification supporting FS81-15 exists in the fact that ***there arealreadyfire-protection rated glazings,*** in sizes larger than 100 sq. in., that have been tested and are approved, listed and labeled to meet the temperature rise door requirements of IBC Section 716.5.5. Several ***fire-***

protection rated products listed by UL for use in temperature rise doors include Keralite ® Ultra 45, 60, 90 and 180, manufactured by Vetrotech Saint-Gobain. All of these products are either made in the U.S. or are readily available in the U.S.

IBC Section 716.5 clearly provides: "Approved *fire door* and fire shutter assemblies shall be constructed of ***any*** material or assembly of component materials that conforms to the test requirements of Section 716.5.1, 716.5.2 or 716.5.3 and the *fire protection rating* indicated in Table 716.5." Accordingly, the IBC is blind to the type of products used and may only ask whether they conform to applicable test requirements and fire protection ratings. If they do, IBC Section 716.5 says that they ***shall*** be permitted. Since it is beyond question that approved ***fire-protection rated*** glazings now exist that conform, by testing, to the fire protection ratings and temperature rise requirements of IBC Section 716.5.5 in sizes greater than 100 sq.in., there, simply, is ***no*** justification for the IBC to preclude their use.

In concluding that FS81-15 lacked "technical justification," the Committee inappropriately ignored the fact that approved, listed and labeled fire-protection rated products exist that meet the temperature rise door requirements of IBC Section 716.5.5.

The second reason advanced by the Committee claims that "the testing required has no thermocouple requirements for the unexposed surface." This, too, is demonstrably, wrong.

Fire doors are tested to NFPA 252 (see, IBC Sections 716.5.1, 716.5.2, 716.5.3 and Table 716.3). NFPA 252, Section 4.3, entitled "Unexposed Surface Temperatures," provides that: "Temperatures of the unexposed surface of the fire door shall be recorded during the first 30 minutes of the fire test and shall be determined in accordance with 4.3.1 through 4.3.3." In turn, NFPA 252, in Sections 4.3.1 through 4.3.3, specifies the number, attachment, and other details of thermocouple use to measure thermal transfer through the fire door during the first 30 minutes of the fire test.

The Committee inappropriately concluded that the "testing" of fire-protection rated glazing used in temperature rise doors "has no thermocouple requirements for the unexposed surface." In doing so, the Committee, simply, ignored the fact that NFPA 252 contains detailed requirements for thermocouple testing of the unexposed surface of fire-protection rated glazing used in temperature rise doors.

We urge you to vote against the standing motion to disapprove FS81-15 and to vote in favor of adopting FS81-15 as modified by this public comment in order to end the completely artificial and inappropriate barrier the IBC currently imposes on the use of approved fire-protection rated glazing that is tested, listed and labeled in full compliance with the temperature rise door requirements of IBC Section 716.5.5.

FS81-15

FS83-15

Table 716.5, 716.5.8.1.2, 716.5.8.1.2.1, 716.5.8.1.2.2

Proposed Change as Submitted

Proponent : Tom Zaremba, Roetzel & Andress, representing Alliance of Fire Rated Glazing Manufacturers (tzaremba@ralaw.com)

2015 International Building Code

Revise as follows:

TABLE 716.5
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[b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[d]	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	100 sq. in. ~~See Note b~~	≤100 sq. in. = D-H-180 >100 sq. in.= D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[a]	100sq. in. ~~See Note b~~	≤100 sq. in. = D-H-180 >100 sq. in.= D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1^1/_2$	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	$1^1/_2$	Not Permitted	W-90
Enclosures for shafts, interior exit stairways and interior exit ramps.	2	$1^1/_2$	100 sq. in.	≤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[e]	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[a]	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 forshafts,exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1	1	100 sq. in.[c]	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
					Fire protection			
Other fire barriers	1	$^3/_4$	Maximum size tested	D-H	$^3/_4$		D-H	
Fire partitions: Corridor walls	1	$^1/_3$[b]	Maximum size tested	D-20	$^3/_4$[b]		D-H-OH-45	
	0.5	$^1/_3$[b]	Maximum size tested	D-20	$^1/_3$		D-H-OH-20	
Other fire partitions	1	$^3/_4$	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	

TYPE OF	REQUIRED	MINIMUM	DOOR	FIRE-RATED	MINIMUM SIDELIGHT/	FIRE-RATED GLAZING

ASSEMBLY	WALL ASSEMBLY RATING (hours)	FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	VISION PANEL SIZE[b]	GLAZING MARKING DOOR VISION PANEL[d]	TRANSOM ASSEMBLY RATING (hours)		MARKING SIDELIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Exterior walls	3	$1^1/_2$	100 sq. in.[b]	≤100 sq. in. = D-H-90 >100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2	$1^1/_2$	100 sq. in.[b]	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
					Fire protection			
	1	$^3/_4$	Maximum size tested	D-H-45	$^3/_4$		D-H-45	
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. 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.

b. Fire-resistance-rated glazing tested to ASTM E 119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.

c. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.

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

e. See Section 716.5.8.1.2.1.

716.5.8.1.2 Fire-protection-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1 hour. Fire-protection-rated glazing shall be ~~prohibited~~ permitted in *fire walls* and *fire barriers* ~~except~~ as provided in Sections 716.5.8.1.2.1 and 716.5.8.1.2.2.

716.5.8.1.2.1 ~~Horizontal exits.~~Fire walls Fire-protection-rated glazing shall be permitted ~~as vision panels~~ in*self-closing* swinging*fire door*doors ~~assemblies serving as horizontal exits~~ in *fire walls* where limited to 100 square inches (0.065 m^2) ~~with no dimension exceeding 10 inches (0.3 mm)~~.

716.5.8.1.2.2 Fire barriers. Fire-protection-rated glazing shall be permitted in *fire doors* ~~having a $1^1/_2$-hour *fire protection rating*~~ intended for installation in *fire barriers*, where limited to 100 square inches (0.065 m^2).

Reason: The code currently prohibits the use of fire-protection rated glazing as vision panels in 3-hour fire doors permitted in 3 and 4-hour fire walls and fire barriers. There are numerous fire-protection rated glazing products listed as 100 sq. in. vision panels for use in 3-hour fire doors. The code currently allows fire-resistance rated glazing in these doors in unlimited size. Nothing in this proposal would change that. Instead, adopting this proposal would also permit the use of fire-protection rated glazing, but limited in size to 100 sq. in. While fire-resistance rated glazing offers protection against thermal transfer, it will do so be becoming opaque. Fire-protection rated glazing, on the other hand, will remain

transparent, enabling fire fighters and first responders to see what is on the other side of the fire door, while at the same time limiting thermal transfer by reason of the 100 sq. in. size limitation associated with its use.

Adopting this proposal will provide architect/specifiers with significantly greater flexibility with no loss of safety. Currently, if the architect/specifier determines, for whatever reason, that the use of fire-resistance rated glazing in these applications is inappropriate, the only other choice would be to use a fire door with no view panel. If this proposal is adopted, a 100 sq. in. view panel would be an available option using listed and labeled fire-protection rated glass.

Consitent with changes to Section 716.5.8.1.2, Table 716.5 would also be changed to limit "door and vision panel size" to 100 sq. in. where fire-protection rated glazing is used in fire walls and fire barriers where 3-hour fie door and fire shutter assemblies are allowed. This would allow glazings in these applications to be marked either "D-H-180" when fire-protection rated glazing is used in 3 or 4 hour fire-resistance rated walls - or - "D-H-W-240" when fire-resistance rated glazing is used in 4-hour fire-resistance walls and "D-H-W-180" when used in 3-hour fire-resistance rated walls.

Cost Impact: Will not increase the cost of construction
Permitting the use of fire-protection glazing will reduce, not increase, the cost of construction. Fire-protection rated glazing is lighter and less expensive than fire-resistance rated glazing.

FS83-15 : T716.5.8.1.2-ZAREMBA5366

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on the following: No technical justification was provided dealing with radiant heat transfer of fire-protection-rated glazing in these applications.

Assembly Action :

None

Individual Consideration Agenda

Public Comment 1:

Proponent : **Tom Zaremba, representing Alliance of Primary Fire Rated Glazing Manufacturers (tzaremba@ralaw.com) requests Approve as Modified by this Public Comment.**

Modify as Follows:

2015 International Building Code

TABLE 716.5
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[b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[d]	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	~~100 sq. in.~~See note b	~~≤100 sq. in. = D-H-180 >100 sq. in.~~= D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[a]	100sq. in.	≤100 sq. in. = D-H-180 >100 sq. in.= D-H-W-180	Not Permitted	3	Not Permitted	W-180

	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1^1/_2$	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	$1^1/_2$	Not Permitted	W-90
Enclosures for shafts, interior exit stairways and interior exit ramps.	2	$1^1/_2$	100 sq. in.	≤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[e]	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[a]	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 forshafts,exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1	1	100 sq. in.[c]	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
					Fire protection			

Other fire barriers	1	$^3/_4$	Maximum size tested	D-H	$^3/_4$	D-H
Fire partitions: Corridor walls	1	$^1/_3$[b]	Maximum size tested	D-20	$^3/_4$[b]	D-H-OH-45
	0.5	$^1/_3$[b]	Maximum size tested	D-20	$^1/_3$	D-H-OH-20
Other fire partitions	1	$^3/_4$	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

For SI: 1 square inch = 645.2 mm.

a. 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.

b. Fire-resistance-rated glazing tested to ASTM E 119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.

c. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.

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

e. See Section 716.5.8.1.2.1.

716.5.8.1.2.1 Fire walls Fire-protection-rated glazing shall be permitted in *fire doors* in *fire walls* having a fire-resistance rating of 3-hours or less where limited to 100 square inches (0.065 m^2).

716.5.8.1.2.2 Fire barriers. Fire-protection-rated glazing shall be permitted in *fire doors* intended for installation in *fire barriers having a fire-resistance rating of 3-hours or less*, where limited to 100 square inches (0.065 m^2).

Commenter's Reason: The Committee's vote on FS83-15 was initially a tie. The tie was broken by the Chair in favor of disapproval. This Public Comment proposes a modification intended to resolve the issue raised by the Committee that likely resulted in the tie vote being broken in favor of disapproval.

Originally, FS83-15 proposed to permit the use of 3-hour fire protection rated glazing in 100 sq. in. vision panels in fire doors used in 3-hour ***and*** 4-hour fire walls and fire barriers. This was proposed as an alternative to either using fire-resistance rated glazing as currently permitted by the code, or having a solid door, with no view at all to the other side of the door.

The stated reason given for the Committee's action disapproving FS83-15 was that "no technical justification was provided dealing with radiant heat transfer of fire-protection-rated glazing in these applications." However, during the hearing, it was evident that the Committee's concern focused on the use of fire-protection rated glazing in 4-hour fire walls and fire barriers. Both will be addressed below.

First, this Public Comment proposes a modification of FS83-15 to address the Committee's concern with the application of this proposal to 4-hour fire walls and barriers. In that regard, the modification submitted with this Public Comment proposes to leave 4-hour fire walls and fire barriers ***unchanged*** and to ***only*** apply FS83-15 as modified by this Public Comment to 3-hour fire walls and fire barriers.

Second, strong technical justification exists for the adoption of FS83-15 as modified. In that regard, the stated concern of the Committee is "radiant heat transfer" involved when fire-protection rated glazings are used. However, FS83-15 does, in fact, address the transfer of radiant heat. In that regard, as modified, FS83-15 would limit the use of fire-protection rated glazing to 100 sq.in. view panels in fire doors used in 3-hour fire walls and barriers. This limitation in size presents a generally accepted methodology for limiting the transfer of radiant heat. This is evident from the fact that ***both*** NFPA 80 and NFPA 101 permit the use of 100 sq.in. fire-protection rated view panels in 3-hour fire doors in 3-hour fire walls and barriers. (*See,* NFPA 80, Sections 4.4.4 and 4.4.5 and Table 4.4.5. See also*,* NFPA 101 Table 8.3.4.2.)

The advantages of allowing the use of 100 sq.in. view panels in fire doors used in 3-hour fire walls and fire barriers are significant

First, if adopted, FS83-15 would only allow the use of fire-protection rated glazing as an ***alternative*** to the use of fire-resistance rated glazing in these doors. No change will be made to anything currently allowed by the code.

Second, while fire-resistance rated glazing is currently allowed in unlimited sizes, it controls thermal transfer by going opaque. Fire-protection rated view panels will, on the other hand, remain completely ***transparent*** throughout the full course of a fire. This means that in a fire, building occupants exiting the building and first responders entering the building will be able to use these vision panels to see what is on the other side of these doors throughout the fire event.

Moreover, the only current alternative to the use of fire-resistance rated glazings in these doors are solid, opaque doors that must be opened to find out what is on the other side. While first responders may be trained to feel whether the door is hot before opening it, lay building occupants have no such training and, without a way to see what is on the other side, they are likely to open a fire door only to face the risk of fire, backdraft or flashover from the other side.

Third, adopting FS83-15 will eliminate a conflict that currently exists with NFPA 80, which already allows the use of 100 sq.in. fire-protection rated view panels in 3-hour fire doors. It will also harmonize the requirements of the IBC with NFPA 101 which also allows the use of fire-protection rated view panels in 3-hour fire doors in 3-hour fire walls and barriers.

Finally, having view panels in these doors provides a margin of "opening door safety" in both fire and non-fire events. In that regard, doors with view panels enable those using them to see others approaching from the other side. Without view panels, opening an opaque door into someone approaching from the other side can result in unnecessary injury.

For all these reasons, we urge you to vote against the standing motion to disapprove FS83-15 and to vote in favor a motion to approve FS83-15 as modified in this Public Comment.

FS83-15

FS84-15

Table 716.5

Proposed Change as Submitted

Proponent : Amber Armstrong, City of Edmond (Oklahoma), representing self (amber.armstrong@edmondok.com)

2015 International Building Code

Revise as follows:

TABLE 716.5
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[b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[d]	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 b	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[a]	See Note b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1^1/_2$	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	$1^1/_2$	Not Permitted	W-90
Fire walls having a required fire-resistance rating of 1 hour	1	1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 > 100 sq. in.=D-	Not Permitted	2	Not Permitted	W-120

interior exit ramps.				H-T-W-90				
Horizontal exits in fire walls[e]	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[a]	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 forshafts,exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1	1	100 sq. in.[c]	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
					Fire protection			
Other fire barriers	1	$^{3}/_{4}$	Maximum size tested	D-H	$^{3}/_{4}$		D-H	
Fire partitions: Corridor walls	1	$^{1}/_{3}$[b]	Maximum size tested	D-20	$^{3}/_{4}$[b]		D-H-OH-45	
	0.5	$^{1}/_{3}$[b]	Maximum size tested	D-20	$^{1}/_{3}$		D-H-OH-20	
Other fire	1	$^{3}/_{4}$	Maximum size tested	D-H-45	$^{3}/_{4}$		D-H-45	

partitions	0.5	$^{1}/_{3}$	Maximum size tested	D-H-20	$^{1}/_{3}$	D-H-20

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[b]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[d]	MINIMUM SIDELIGHT/ TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDELIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Exterior walls	3	$1^{1}/_{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 >100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2	$1^{1}/_{2}$	100 sq. in.[b]	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
					Fire protection			
	1	$^{3}/_{4}$	Maximum size tested	D-H-45	$^{3}/_{4}$		D-H-45	
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. 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.

b. Fire-resistance-rated glazing tested to ASTM E 119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.

c. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.

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

e. See Section 716.5.8.1.2.1.

Reason: This code change is intended to provide requirements for opening protection assemblies in 1-hour fire walls.
According to IBC Section 706.2, "fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section." In NFPA 221 2015 edition, requirements for a specific type of fire wall called a Double Fire Wall are detailed. A Double Fire Wall consists of two walls, parallel to each other which have no connections between them and are independently supported by structural elements on either side. According to Section 4.5 and Table 4.5, when each wall of a double fire wall assembly is supported by structural elements which have a fire-resistance rating less than that required for the wall, the fire-resistance rating of each wall may be reduced by one hour.

For example, a building is required to be divided by a 2-hour fire wall. The designer chooses to construct two walls, back-to-back as opposed to a single fire wall. Each wall is supported by a structural frame which does not have a fire-resistance rating. Per NFPA 221, Table 4.5, each wall of

the double fire wall assembly is permitted to have a fire-resistance rating of 1-hour. NFPA 221 Section 6.10.3 requires that openings in each wall which comprises the double fire wall be protected separately. Neither NFPA 221~~, Table 4.8.2~~nor IBC Table 716.5 list the opening requirements for a 1-hour fire wall.

There are many conditions when construction of two independent walls is a more desirable option than a single fire wall. Openings between the "separate" buildings are common. With no direction on a fire-resistance rating for that opening protection, the designer does not know what to provide, and the code official must determine the appropriate rating. This decision is subjective based on each code official and will not be consistent from jurisdiction to jurisdiction.

Cost Impact: Will not increase the cost of construction
This change will not increase the cost of construction because the fire-resistance rating of 60-minutes is less than the minimum stated for any fire wall.

FS84-15 : T716.5-ARMSTRONG5679

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee thought that this was a good concept, but would prefer that the table relate to a specific double wall allowance rather than calling it a fire wall.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : **Amber Armstrong, representing self requests Approve as Submitted.**

Commenter's Reason: As stated in the reason statement for FS84-15, NFPA 221 allows for a fire wall to be constructed of two parallel walls and further allows for the fire-resistance rating of each wall to be lower than the required rating of the fire wall. This is part of the double wall assembly in Section 4.5. Whether a single wall or a double wall assembly, the walls are still fire walls and NFPA 221 Section 4.5/Table 4.5 allows a 2-hour fire wall to be constructed of two 1-hour fire resistance rated walls (if they meet certain criteria).
If the fire wall was required to be 3-hours, it could be built of two 2-hour fire resistance rated walls according to NFPA 221. The requirements for the opening fire protection rating in each of those 2-hour walls is found in Table 716.5 on the row named "Fire wall and fire barriers having a required fire resistance rating greater than 1-hour." More specifically, the row for the required wall assembly rating of 2-hours.

What is lacking in the table is the requirements for each wall of a double wall assembly constructed of two 1-hour fire resistance rated walls.

If the issue with FS84-15 is that it does not address the double wall assembly, then the appropriate fix would be to create a new set of rows for single walls which make up the double wall assembly for each of the possible fire resistance ratings. However, that would become more confusing because the double wall assembly fire wall does not exist in the IBC.

In conclusion, each wall of a double wall assembly meeting the requirements in NFPA 221 are still fire walls and FS84-15 adds requirements for the opening fire protection assembly for 1-hour fire resistance rated walls, which is not addressed.

Please overturn the committee and approve FS84-15 as submitted.

Public Comment 2:

Proponent : **Amber Armstrong, representing self requests Approve as Modified by this Public Comment.**

Modify as Follows:

2015 International Building Code

TABLE 716.5
OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING	MINIMUM FIRE DOOR AND FIRE	DOOR VISION PANEL SIZE[b]	FIRE-RATED GLAZING MARKING DOOR	MINIMUM SIDELIGHT/ TRANSOM ASSEMBLY RATING (hours)	FIRE-RATED GLAZING MARKING SIDELIGHT/TRANSOM PANEL

	(hours)	SHUTTER ASSEMBLY RATING (hours)		VISION PANEL[d]				
					Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4	3	See Note b	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3[a]	See Note b	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	$1^1/_2$	$1^1/_2$	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.=D-H-W-90	Not Permitted	$1^1/_2$	Not Permitted	W-90
Fire walls having a required fire-resistance rating of 1 hour[f]	1	1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps.	2	$1^1/_2$	100 sq. in.	≤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[e]	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[a]	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	1	1	100 sq. in.[c]	≤100 sq. in. = D-H-60	Not Permitted	1	Not Permitted	W-60

required fire-resistance rating of 1 hour: Enclosures forshafts,exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls				>100 sq. in.= D-H-T-W-60				
					Fire protection			
Other fire barriers	1	$^3/_4$	Maximum size tested	D-H	$^3/_4$		D-H	
Fire partitions: Corridor walls	1	$^1/_3$[b]	Maximum size tested	D-20	$^3/_4$[b]		D-H-OH-45	
	0.5	$^1/_3$[b]	Maximum size tested	D-20	$^1/_3$		D-H-OH-20	
Other fire partitions	1	$^3/_4$	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	

For SI: 1 square inch = 645.2 mm.

a. 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.

b. Fire-resistance-rated glazing tested to ASTM E 119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.

c. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.

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

e. See Section 716.5.8.1.2.1.

f. Individual 1-hour fire resistance rated walls as a part of a double wall assembly fire wall meeting the requirements of NFPA 221.

Commenter's Reason: The committee felt that because there is no such thing as a 1-hour fire wall in the IBC, FS84-15 should be modified to identify that the 1-hour fire resistance wall was part of a double wall assembly. This public comment creates a footnote to Table 716.5 which clarifies the distinction.

FS84-15

FS89-15

716.5.3.1.1 (New)

Proposed Change as Submitted

Proponent : John Woestman, representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com)

2015 International Building Code

Add new text as follows:

716.5.3.1.1 Terminated stops. On doors required by this code to be smoke and draft control doors, stops on door frames shall be permitted to terminate not more than 6" above the floor.

> **Exception:** Section 716.5.3.1.1 shall not apply to smoke and draft control doors required by Sections 3006.3, 3007.6.3, and 3008.6.3.

Reason: Many doors installed in hollow metal frames in health care facilities have terminated stops. These terminated stops are also known as "hospital stops" or "sanitary stops." A terminated stop is a factory modification to a door frame, where the stop is terminated above the floor. The bottom of the stop is closed at a 45-degree or 90-degree angle. The purpose of a terminated stop is to make it easier to clean that area of the floor without the extra corners to catch debris or pathogens, and to avoid getting cart or bed wheels caught on the stop.
The code is silent regarding terminated stops. This proposal provides guidance where terminated stops would be allowed, and not allowed, by the code. This proposal is consistent with the testing requirements of UL 1784.

Cost Impact: Will not increase the cost of construction
No mandatory costs. Door frames with terminated stops may have a slight increase in cost compared to door frames with full length stops. However, installation of door frames with terminated stops is optional.

FS89-15 : 716.5.3.1.1 (New)-WOESTMAN5522

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on the following: Consider limiting this to I occupancies as indicated in the reason statement; and consider making the exception the charging text and the charging text the exception.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : John Woestman, Kellen, representing Builders Hardware Manufacturers Association (jwoestman@kellencompany.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

Terminated stops. Factory modification to a door frame where the stops of the door frame are terminated not more than 6" from the bottom of the door frame. Terminated stops are also known as "hospital stops" or "sanitary stops".

716.5.3.1.1 Terminated stops. On doors required by ~~this code~~ Sections 3006.3.(3), 3007.6.3, or 3008.6.3 to be smoke and draft control doors, terminated stops on the door frames shall not be permitted ~~to terminate not more than 6" above the floor.~~ .

> ~~**Exception:** Section 716.5.3.1.1 shall not apply to smoke and draft control doors required by Sections 3006.3, 3007.6.3, and 3008.6.3.~~

Commenter's Reason: Addressing the committee comments, the code today is silent regarding terminated stops and does not prohibit the use of door frames with terminated stops. Interior door frames in many buildings have terminated stops, especially – but not only in – health care facilities. Some interior door frames in business occupancies, and other occupancies, may also have terminated stops. This Public Comment takes a different approach from the original proposal to provide guidance where terminated stops would not be allowed.

Unfortunately, the IBC currently does not include an important requirement that door assemblies required to meet the testing requirements of UL1784 when tested without an artificial bottom seal, as required in 3006.3.(3), 3007.6.3, or 3008.6.3,

should not be permitted to use door frames with terminated stops. For other smoke and draft control door assemblies required to be tested to UL1784, this proposal is consistent with the testing requirements of UL 1784.

Terminated stops are a factory modification to a door frame, where the stops are terminated above the floor. The bottom of the stop is closed at a 45-degree or 90-degree angle. The purpose of terminated stops is to make it easier to clean that area of the floor without the extra corners to catch debris or pathogens, and to avoid getting moveable items caught on the stop. Terminated stops are also known as "hospital stops" or "sanitary stops."

FS89-15

FS96-15
716.5.9.4

Proposed Change as Submitted

Proponent : Joseph Hetzel, representing Door & Access Systems Manufacturers Association (Jhetzel@thomasamc.com)

2015 International Building Code

Revise as follows:

716.5.9.4 Doors in pedestrian ways. ~~Vertical sliding~~ Sliding or ~~vertical~~ rolling steel *fire doors* in openings through which pedestrians travel shall be heat activated or activated by smoke detectors with alarm verification.

Reason: Sliding fire doors can operate horizontally, thus the "vertical" descriptor is not needed because it is too limiting. Rolling steel fire doors always operate vertically by definition, so the "vertical" descriptor is redundant and unnecessary.

Cost Impact: Will not increase the cost of construction
None.The language change has no effect on the product and thus no effect on construction cost, thus no study is needed.

FS96-15 : 716.5.9.4-HETZEL3420

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that inherent safety issues related to vertical operation of these doors is cause enough to leave the term "vertical" in this section.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Joseph Hetzel, representing Door & Access Systems Manufacturers Association (Jhetzel@thomasamc.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

716.5.9.4 Doors in pedestrian ways. ~~Sliding~~ Vertical sliding fire doors or rolling steel *fire doors* in openings through which pedestrians travel shall be heat activated or activated by smoke detectors with alarm verification.

Commenter's Reason: The "vertical" descriptor for sliding fire doors should be kept. Vertical sliding fire doors and rolling steel fire doors should be editorially separated, since rolling steel fire doors always operate vertically by definition and

thus the "vertical" descriptor for those doors is redundant and unnecessary.

FS96-15

FS102-15 Part I

202 (New), 717 (New), 717.1 (New), 717.2 (New), 717.3 (New), 721.1.17 (New), Chapter 35

Proposed Change as Submitted

Proponent : Stephen Thomas, Colorado Code Consulting, LLC, representing Smoke Guard (sthomas@coloradocode.net)

NOTE: PART III DID NOT RECEIVE A PUBLIC COMMENT AND IS ON THE CONSENT AGENDA. PART III IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY FOLLOWING ALL OF PART II.

2015 International Building Code

Add new definition as follows:

SECTION 202 DEFINITIONS

FIRE CURTAIN. A flexible membrane assembly constructed of materials designed to restrict the spread of fire when tested in accordance with UL 10D.

Add new text as follows:

SECTION 717 Fire and Smoke Curtains

717.1 General Fire and smoke curtains permitted by other sections of this code shall comply with the provisions of this section.

717.2 Fire Test Criteria Fire and smoke curtains shall be tested in accordance with the requirements of UL 10D.

717.3 Activation Fire and smoke curtains shall comply with the following criteria:

1. Fire and smoke curtains shall be actuated by approved spot-type detectors listed for releasing service.
2. Fire detection systems providing control input or output signals to fire and smoke curtains or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

721.1.17 Fire curtains. Vertical floor openings shall be permitted where protected by a fire curtain in accordance with Section 717. Fire curtains shall achieve a minimum one-hour fire-protection rating, and not less than the assembly being penetrated, but need not exceed 2 hours.

Add new standard(s) as follows:
UL 10D-2014 Standard for Fire Tests of Fire Protective Curtain Assemblies

Reason: This proposal introduces fire curtains into the code to be used in protecting vertical openings. The current code has several different ways to protect these

openings. These curtains have been tested in accordance with UL 10D which is similar to UL 263 without the hose stream test. Horizontal assemblies are not required to pass the hose stream test. Therefore, the standards are similar in how they evaluate the system. This proposal would permit a horizontally deployed curtain that would enclose the vertical floor opening and provide the same protection as the horizontal assembly.

Cost Impact: Will not increase the cost of construction
By installing a horizontal curtain across a floor opening, the need for a smoke control system can be eliminated. Therefore, this proposal will reduce the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, UL 10D, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS102-15 Part I : 717 (New)-THOMAS4504

Public Hearing Results

Part I

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: The scope of UL10 indicates that these systems are "supplemental" only; the proposed definition should not contain requirements by reference to UL10; the definition should reference the entire system that incorporates the fire curtain; the definition is not needed as it is contained in UL10; the defined term is fire curtain but requirements in Section 717 are for fire and smoke curtains, which is inconsistent; and equivalence to other fire resistance rated issues need to be addressed such as hose stream, temperature rise and smoke migration.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : William Koffel, Koffel Associates, Inc., representing McKeon Door Company (wkoffel@koffel.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

FIRE PROTECTIVE CURTAIN ASSEMBLY. ~~A flexible membrane~~ An assembly ~~constructed~~ typically consisting of ~~materials designed to restrict the spread of fire when tested in accordance with UL 10D.~~ a fabric curtain, bottom bar, guides, coil, operating and closing system.

716.7 Fire protective curtain assembly. Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials tested without hose stream in accorance with UL 10B,

UL 10C, or UL 10D, and shall comply with the following.

716.7.1 Label Fire protective curtain assemblies used as opening protectives in fire rated walls and smoke partiitions shall be labeled in accordance with 716.5.7.

716.7.2 Smoke and draft control Fire protective curtain assemblies used to protect openings where smoke and draft control assemblies are required shall comply with 716.5.3.1.

716.7.3 Rating Fire protective curtain assemblies shall be permitted to be used as opening protectives where the required fire protection rating does not exceed 20 minutes, wihout the hose stream test.

~~**717.1 General** Fire and smoke curtains permitted by other sections of this code shall comply with the provisions of this section.~~

~~**717.2 Fire Test Criteria** Fire and smoke curtains shall be tested in accordance with the requirements of UL 10D.~~

~~**717.3 Activation** Fire and smoke curtains shall comply with the following criteria:~~

1. ~~Fire and smoke curtains shall be actuated by approved spot-type detectors listed for releasing service.~~
2. ~~Fire detection systems providing control input or output signals to fire and smoke curtains or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.~~

~~SECTION 717 Fire and Smoke Curtains~~

~~**721.1.17 Fire curtains.** Vertical floor openings shall be permitted where protected by a fire curtain in accordance with Section 717. Fire curtains shall achieve a minimum one-hour fire-protection rating, and not less than the assembly being penetrated, but need not exceed 2 hours.~~

Modify standard(s) as follows:
UL 10D-2014 Standard for Fire Tests of Fire Protective Curtain Assemblies

Commenter's Reason: The Committee Action for Disapprovale of all three parts of FS 102-15 was based at least in part on the original proponent's intent to use fabric fire protective curtain assemblies as an opening protective having a one hour fire protection rating and to replace one hour fire barriers. Rated fire protective curtain assemblies cannot resist the passage of heat to achieve a fire resistnace rating equal to a fire barrier or fire partition nor can they perform in accordance with the hose stream test criteria as required by the IBC for opening protectives having a fire protection rating greater than one hour.
UL developed test criteria for fire protective curtain assemblies, UL 10D, and it was published as an ANSI Standard in January, 2014. Section 1.1 of the Scope of UL 10D reads:

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 provide nonstructural separation only, and are not intended to be substituted for structural hourly rated partitions or openign protectives that have been tested for fire endurance and hose stream performance.

The proposed deifiniton and uses are consistent with NFPA 80-2016 and UL 10D. Existing fire protective curtain assemblies can pass UL 10B, UL 10C, or UL 10D for a fire endurance of 20 minutes without the hose stream test. Some products can also pass UL 1784 for an "S" label. Therefore, the Public Comment proposes applications where approved fire protective curtain assemblies should be permitted consistent wtih NFPA 80, UL 10D, and current provisions of the IBC.

The proposed requirement that the assembly be "approved" in addition to "listed" allows the Code Official to specifically approve the proposed application. We are aware of instances in which such products have been proposed to be used in a means of egress and other applications such as separation of atria. While the proposed language should limit the use in some of the currently known applications, the requirement that the application be "approved" requires specific review and approval by the Code Official.

Rather than create an entire new section in Chapter 7, the Public Comment proposes new materail within Section 716 since fire protective curtain assemblies are truly an opening protective. It should be noted that if FS 101-15 is approved, which significantly reformats the existing Section 716, the references herein can be revised to reflect the content in the newly formated Section 716.

FS102-15 Part I

FS102-15 Part II

404.6, 717 (New), 717.1 (New), 717.2 (New), 717.3 (New), 202 (New), Chapter 35

Proposed Change as Submitted

Proponent : Stephen Thomas, Colorado Code Consulting, LLC, representing Smoke Guard (sthomas@coloradocode.net)

2015 International Building Code

Revise as follows:

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

Exceptions:

1. A *fire barrier* is not required where a glass wall forming a smoke partition is provided. The glass wall shall comply with all of the following:
    - 1.1. Automatic sprinklers are provided along both sides of the separation wall and doors, or on the room side only if there is not a walkway on the *atrium* side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction;
    - 1.2. The glass wall shall be installed in a gasketed frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates; and
    - 1.3. Where glass doors are provided in the glass wall, they shall be either *self-closing* or automatic-closing.
2. A *fire barrier* is not required where a glass-block wall assembly complying with Section 2110 and having a $^{3}/_{4}$-hour *fire protection rating* is provided.
3. A *fire barrier* is not required between the *atrium* and the adjoining spaces of any three floors of the *atrium* provided such spaces are accounted for in the design of the smoke control system.
4. <u>A fire barrier is not required between the atrium and the adjoining spaces when a fire curtain having a one-hour fire-protection rating in accordance with Section 717 is installed at the perimeter of the atrium opening. The curtain shall not be placed in such a location as to obstruct the means of egress.</u>

Add new text as follows:

SECTION 717 Fire and Smoke Curtains

717.1 General Fire and smoke curtains permitted by other sections of this code shall comply with the provisions of this section.

717.2 Fire Test Criteria Fire and smoke curtains shall be tested in accordance with the requirements of UL 10D.

717.3 Activation Fire and smoke curtains shall comply with the following criteria:

1. Fire and smoke curtains shall be actuated by approved spot-type detectors listed for releasing service.
2. Fire detection systems providing control input or output signals to fire and smoke curtains or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

Add new definition as follows:

SECTION 202 DEFINITIONS

FIRE CURTAIN A flexible membrane assembly constructed of materials designed to restrict the spread of fire when tested in accordance with UL 10D.

Add new standard(s) as follows:
UL 10D-2014 Standard for Fire Tests of Fire Protective Curtain Assemblies

Reason: Section 404.6 requires that an atrium be separated from other spaces of the building by a one-hour fire barrier. The exceptions to that requirement permit the installation of a non-fire rated assembly in exception 1. ThIS proposal will permit the installation of a fire curtain around the perimeter of the atrium as an additional option. It is our position that a fire curtain provides an equivalent level of protection to glass forming a smoke partition protected by automatic sprinklers outlined in exception 1. In fact, this installation has been approved by many jurisidictions as an equivalent design. The intent of the exception is to provide a smoke separation at the atrium. The proposal is also creating a new section and definition to address the testing and installation requirements for the curtain. UL 10D has been specified as the test standard for the fire curtains. It is similar to other fire-resistance tests with the exception of a hose stream test.

Cost Impact: Will not increase the cost of construction
This change will reduce the cost of construction. It will decrease the volume of the atrium and reduce the cost of the smoke control system in a building.

Analysis: A review of the standard proposed for inclusion in the code, UL 10D, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS102-15 Part II : 717 (New)-THOMAS4498

Public Hearing Results

Part II

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: The proposed definition should not contain requirements by reference to UL10; the definition should reference the entire system that incorporates the fire curtain; the definition is not needed as it is contained in UL10; the defined term is fire curtain but requirements in Section 717 are for fire and smoke curtains, which is inconsistent; equivalence to other fire resistance rated issues need to be addressed such as hose stream, temperature rise and smoke migration; and for horizontal applications in an atrium, sprinkler design needs to be addressed for above and below the curtain.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Stephen Thomas, Colorado Code Consulting, LLC, representing SMoke Guard, Inc. (sthomas@coloradocode.net) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

~~**FIRE**~~ **FIRE-PROTECTIVE CURTAIN ASSEMBLY** A ~~flexible membrane assembly constructed~~ system inclusive of ~~materials designed~~ the fire-protective curtain and associated components. The system includes, but is not limited to ~~restrict~~ , the ~~spread of fire when tested in accordance with UL 10D~~ fire-protective curtain, storage and deployment unit and the framing and anchoring system.

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

Exceptions:

1. A *fire barrier* is not required where a glass wall forming a smoke partition is provided. The glass wall shall comply with all of the following:
    1.1. Automatic sprinklers are provided along both sides of the separation wall and doors, or on the room side only if there is not a walkway on the *atrium* side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon

activation of the sprinkler system without obstruction;

1.2. The glass wall shall be installed in a gasketed frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates; and

1.3. Where glass doors are provided in the glass wall, they shall be either *self-closing* or automatic-closing.

2. A *fire barrier* is not required where a glass-block wall assembly complying with Section 2110 and having a $^{3}/_{4}$-hour *fire protection rating* is provided.
3. A *fire barrier* is not required between the *atrium* and the adjoining spaces of any three floors of the *atrium* provided such spaces are accounted for in the design of the smoke control system.
4. A fire barrier is not required ~~between~~ where the atrium ~~and~~ space is separated from the ~~adjoining~~ adjacent spaces ~~when~~ by a fire protective curtain assembly having a one-hour fire-protection rating ~~in accordance with~~ meeting the requirements of Section 717 ~~is installed at the perimeter of the atrium opening. The curtain shall not be placed in such a location as to obstruct the means of egress~~.

SECTION 717 ~~Fire and Smoke Curtains~~ FIRE PROTECTIVE CURTAIN ASSEMBLIES

717.1 General ~~Fire and smoke curtains~~
Fire-protective curtain assemblies permitted by other sections of this code shall comply with the provisions of this section.

717.2 Fire ~~Test Criteria~~ test criteria ~~Fire and smoke curtains~~
Fire-protective curtain assemblies shall be tested in accordance with the requirements of UL 10D.

717.3 Activation ~~Fire and smoke curtains~~ Fire-protective curtain assemblies shall comply with the following criteria:

1. ~~Fire and smoke curtains~~ The curtain assemblies shall be actuated by approved spot-type detectors listed for releasing service~~.~~ , or an engineered smoke control system, and
2. Fire detection systems providing control input or output signals to ~~fire and smoke curtains~~ the curtain assemblies or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

Modify standard(s) as follows:
UL 10D-2014 Standard for Fire Tests of Fire Protective Curtain Assemblies

Commenter's Reason: This public comment addresses the testimony and comments from the committee regarding fire-protected curtain assemblies during the committee hearings. We have removed the reference to UL 10D in the definition. We feel that the definition is necessary in the building code to provide users with a

description of what these types of systems are. The definition is consistent with the UL 10D Standard. The requirements now references the entire system instead of just the curtains as the previous proposal did. We have also revised the language to be consistent with UL 10D throughout the change. The term fire-protective curtain assembly is now consistent in all of the sections.
It is the intent of this proposal to use fire-protective curtain assemblies as an alternative to providing separation between an atrium and adjacent spaces. The current separation of water-washed glass wall does not require any type of fire-resistance rating. It also does not require a hose stream test. The fire-protective curtain will provide the same level of protection than the water-washed glass wall if not better protection since it has a fire-protection rating. The glass wall will not work without the fire sprinklers. A curtain assembly works without the need for additional protection.

Fire-protective curtains provide an additional option for providing separation between the atrium and adjacent spaces. The curtain assemblies can be placed around the atrium opening to reduce the overall size of the atrium. This can then reduce the size and cost of a smoke control system. The curtain assemblies can also be placed in large openings so that the smoke control system does not have to be designed to account for the adjacent spaces. The curtain assemblies have been tested under UL 10D to a two-hour fire protection rating. The proposal requires a one-hour fire protection rating when using the curtain assembly. This rating is a tested assembly versus the current glass wall with sprinkler separation that has never been tested.

FS102-15 Part II

NOTE: PART III DID NOT RECEIVE A PUBLIC COMMENT AND IS REPRODUCED FOR INFORMATIONAL PURPOSES ONLY

FS102-15 Part III

202, 717 (New), 717.1 (New), 717.2 (New), 717.3 (New), 1019.3, Chapter 35

Proposed Change as Submitted

Proponent : Stephen Thomas, Colorado Code Consulting, LLC, representing Smoke Guard (sthomas@coloradocode.net)

2015 International Building Code

Add new definition as follows:

SECTION 202 DEFINITIONS

FIRE CURTAIN. A flexible membrane assembly constructed of materials designed to restrict the spread of fire when tested in accordance with UL 10D.

Add new text as follows:

SECTION 717 Fire and Smoke Curtains

717.1 General Fire and smoke curtains permitted by other sections of this code shall comply with the provisions of this section.

717.2 Fire Test Criteria Fire and smoke curtains shall be tested in accordance with the requirements of UL 10D.

717.3 Activation Fire and smoke curtains shall comply with the following criteria:

1. Fire and smoke curtains shall be actuated by approved spot-type detectors listed for releasing service.
2. Fire detection systems providing control input or output signals to fire and smoke curtains or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

Revise as follows:

1019.3 Occupancies other than Groups I-2 and I-3. In other than Group I-2 and I-3 occupancies, floor openings containing *exit access stairways* or *ramps* that do not comply with one of the conditions listed in this section shall be enclosed with a shaft enclosure constructed in accordance with Section 713.

1. *Exit access stairways* and *ramps* that serve or atmospherically communicate between only two stories. Such interconnected stories shall not be open to other stories.
2. In Group R-1, R-2 or R-3 occupancies, *exit accessstairways* and *ramps* connecting four stories or less serving and contained

within an individual *dwelling unit* or *sleeping unit* or *live/work unit.*

3. *Exit access stairways* serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed.
4. *Exit access stairways* and *ramps* in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the *stairway* or *ramp* and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.
5. *Exit access stairways* and *ramps* within an *atrium* complying with the provisions of Section 404.
6. *Exit access stairways* and *ramps* in *open parking garages* that serve only the parking garage.
7. *Exit access stairways* and *ramps* serving open-air seating complying with the *exit access* travel distance requirements of Section 1029.7.
8. *Exit access stairways* and *ramps* serving the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, *places of religious worship*, auditoriums and sports facilities.
9. Stairways that serve, or atmospherically communicate between a maximum of four stories, and are not part of the required means of egress shall be permitted to be enclosed by a fire curtain installed in accordance with Section 717.

Add new standard(s) as follows:
UL 10D-2014 Standard for Fire Tests of Fire Protective Curtain Assemblies

Reason: This proposal presents a new type of separation requirement for exit access stairways. It introduces the concept of fire curtains into the code and permits their use to enclose exit access stairs that serve a maximum of four stories. Fire curtains are tested to UL 10D which does not include the hose stream test. The intent is to allow an alternative to a full enclosure. The current code permits stairs to be open between adjacent stories without enclosure. This proposal is also consistent with the protection that Exception 4 of Section 1099.3 provides, with the draft curtain and closely spaced sprinklers. In fact, the fire curtain will provide a better level of protection than the 18 inch draft curtains.

Cost Impact: Will not increase the cost of construction
This change provides an alternate to enclosing stairs. Therefore, the cost of construction will not be affected.

Analysis: A review of the standard proposed for inclusion in the code, UL 10D, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS102-15 Part III : 717 (New)-THOMAS4584

Public Hearing Results

Part III

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: The scope of UL10 indicates that these systems are "supplemental" only; the scope of UL10 indicates that these products are appropriate for 20 minute door assemblies, not for the use described in this proposal; the proposed definition should not contain requirements by reference to UL10; the definition should reference the entire system that incorporates the fire curtain; the definition is not needed as it is contained in UL10; the defined term is fire curtain but requirements in Section 717 are for fire and smoke curtains, which is inconsistent; and equivalence to other fire resistance rated issues need to be addressed such as hose stream, temperature rise and smoke migration.

Assembly Action : None

FS105-15

717.2.1 (IMC 607.2.1), Chapter 35

Proposed Change as Submitted

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

2015 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 enclosures in accordance with Section 713, or tested in accordance with ASTM E2816-11, with a minimum F and T rating of not less than 2 hours, continuously from the air handling appliance or equipment to the air outlet and inlet terminal, or *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 E2816-11, Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems.

Reason: This proposal would require HVAC ducts installed for the purposes of stairwell pressurization to be enclosed within a shaft or protected by a tested and listed assembly conforming to the new ASTM E2816-11, Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems evaluated for the specific purpose. The new ASTM Standard evaluates the HVAC duct systems for surface burning characteristics, non-combustibility, fire resistance, durability, and fire engulfment with horizontal and vertical through-penetration firestops. The Standard can evaluate the fire performance of HVAC ducts for both supply (pressurization) and return air, in the vertical and horizontal orientation, with or without openings. These test methods evaluate the ability of a HVAC duct system to resist the spread of fire from one compartment to another compartment separated by fire resistance rated construction when the HVAC duct system is exposed to fire from the outside of the horizontal or vertical HVAC duct system, or from the outside with hot gases entering the inside of the HVAC duct system from unprotected openings, when subjected to the standard time-temperature curve of ASTM E119. This test is now also referenced as part of ICC-ES AC179, Acceptance Criteria for Metallic HVAC Duct Enclosure Assemblies.

The purpose of these acceptance criteria is to establish requirements for fire protection enclosure systems applied to metallic HVAC ducts, which provides an alternate to required fire-resistance-rated shafts or an alternate to required fire dampers in specific locations. This criteria provides an alternate to shaft enclosures for vertical ducts, and an alternate to fire dampers in horizontal ducts (penetrating fire barriers, fire partitions, and or smoke barriers) and vertical ducts connecting multiple stories. The purpose of a closed pressurization system is to provide fresh air directly to stairwells or egress areas. This design air pressures need to be

sufficient to maintain closed doors while preventing smoke from entering the egress path. Smoke control systems have been required in nearly two thirds of the United States for over a decade. High-rise buildings constructed to the requirements of International Building Code, but without any specific measures to control smoke migration, are all the more vulnerable to property damage and occupants' loss of life.

Pressurization results in airflows of high velocity in the gaps around closed doors and construction cracks, thereby preventing smoke from flowing back into the pressurized space through these openings. Pressurized stairwells are provided with the goal of maintaining a tenable environment within the escape routes in the event of a building fire. While the option to use stairwell pressurization exists, the IBC does not require stairwell pressurization in high-rise buildings, and only requires smoke control in underground buildings, atriums, and covered mall buildings. Section 403.5.4 of the 2012 IBC requires smokeproof exit enclosures for high-rise buildings in every required stairway serving floors more than 75 feet (22.86 m) above the ground. Section 909.20.5 merely permits sprinklered buildings to use stairwell pressurization as an alternate to the smokeproof enclosures. When employed, ducts used for Stair pressurization to provide uncontaminated air within required interior exit stairwells or areas of egress need to be protected from the effect of fire, or constructed as fire resistant systems.

This principle of protecting HVAC ducts used as part of a smoke control system from the effects of fire exposure is already contained in section 909.4 as part of a rational analysis supporting the design of smoke control systems to be employed. Section 909.4.4 requires that the design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis must include all permutations of systems status, and the design shall consider the effects of the fire on the HVAC systems.

Particularly in the case of tall buildings, the predominant factors that cause smoke movement are stack effects, the affect of external wind forces, and forced air movement within the building. Smoke removal and venting practices are complicated by stack effects, which will tend to favour natural air movement vertically through the building as a results of differences in temperature and densities between the inside and outside air. [1]

Options such as the use of natural ventilation are only available where openings in exterior stairwells can be accommodated. Even then, a number of problems have been identified with this approach. Firstly, the required volume of fresh air is high. Secondly, natural supply and exhaust through vents may be subject to adverse exterior wind conditions, and even when functioning satisfactorily, would generally require vents located on different exterior walls. Thirdly, the performance of natural vents is influenced by building stack effects, which may be particularly significant on the upper or lowermost stories for tall buildings. This effect can range from either strong inflow or strong outflow from all natural vents on a given storey.[2]

Bibliography: 1. Klote, J.H. and Milke, J.A. Fire Protection Handbook, NFPA 19th Edition, Volume II, Smoke Movement in Buildings, Chapter 6, Section 12-113 –12-126
2. Building Research Establishment, UK, Smoke Ventillation of Common Access Areas of Flats & Maisonettes (BD2410), Final Factual Report, Appendix A (Review), BRE Ltd, 2005

Cost Impact: Will increase the cost of construction
This proposal introduces a neccessary life safety feature that is often overlooked.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2816, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS105-15 : 717.2.1-CRIMI4313

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: The referenced standard, ASTM E2816 does not contain fire side survivability criteria. If the duct is compromised, then pressurization would not occur and the system would fail to function as needed; transitions in direction need to be evaluated separately as transitions are not dealt with in the standard - the proposed text should reflect this so a plan reviewer knows to look for evidence of this; this does not appear to be an option, rather a restriction, which more than likely would have cost implications.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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 ~~enclosures~~ enclosure in accordance with Section 713, or tested in accordance with ASTM ~~E2816-11~~ E2816, with a minimum F and T rating of not less than 2 hours, continuously from the air handling appliance or equipment to the air outlet and inlet terminal, or shall utilize *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.

Modify standard(s) as follows:

Commenter's Reason: During the Code Action Hearings last spring, several issues were raised regarding the ASTM E2816 standard which need to be clarified.

First, the assertions that the ASTM E2816 Standard does not contain "fire side survivability criteria" are not correct. In order to further emphasize this, Committee ASTM E05 has just approved revisions to the E 2816-15 edition of the standard that emphasize this point. Section 5 and 16 of the Standard are being updated to more clearly state that the support system must carry the load of the HVAC duct for the entire duration of the fire engulfment test. The Standard already states the HVAC

duct must retain its integrity during the test (Clause 5.1) and that the support system be capable of carrying the load of the HVAC duct and its fire-resistive material(s) during the entire duration of the standardized fire-engulfment test (Clauses 5.2.2 and 16.4.6).

Similarly, the assertions that transitions in direction are not dealt with in the Standard are also incorrect. Both the vertical and the horizontal test specimen (Duct A and Duct B conditions) require at least one joint on the fire side, one joint located on the unexposed side, one straight section, one "T" section, and one 90-degree elbow (with an end cap) to be evaluated as part of the tested specimen (Clauses 7.4.5.1 and 7.4.5.2).

This Standard does evaluate the fire performance of HVAC ducts for both supply (pressurization) and return air, in the vertical and horizontal orientation, with or without openings, joints and connections. It should be noted that this proposal applies to cases where fire dampers cannot be installed because they will interfere with the operation of the smoke control system. The ASTM E2816 test method evaluates the ability of an HVAC duct system to resist the spread of fire from one compartment to another compartment separated by fire resistance rated construction when the HVAC duct system is exposed to fire from the outside of the horizontal or vertical HVAC duct system, or from the outside with hot gases entering the inside of the HVAC duct system from unprotected openings, when subjected to the standard time-temperature curve of ASTM E119.

FS105-15

FS106-15

717.2.3 (New) [IMC 607.2.3 (New)]

Proposed Change as Submitted

Proponent : Rebecca Baker, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO) (bbaker@co.jefferson.co.us)

2015 International Building Code

Add new text as follows:

717.2.3 Smoke damper location. Smoke damper blades in the closed position shall be located at or adjacent to but not more than 24 inches away from the smoke barrier or partition penetration. There shall be no inlets or outlets between the damper and the smoke barrier.

Reason: This user friendly language is found in all smoke damper installation instructions that few in the industry are aware of. This language will aid in understanding the flexibility associated with property location requirements for installers, designers and inspectors. These requirements can be found in Greenheck, Ruskin, Pottorff and all the other manufactureres instructions. One of the problems is UL 555-S only requires that one set of instructions be furnished *per shipment* of dampers and are rarely available for those who may need them in the field. This is consistent with NFPA 90.A

Cost Impact: Will not increase the cost of construction
This new section calls out the existing requirement in the code rather than the manufacturers information, which is often not readily available. By having the requirement, which increases flexibility, easier to find the new code section may actually reduce costs.

FS106-15 : 717.2.3 (New)-BAKER3332

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: These requirements should not be in the code as they are part of the manufacturer's individual product listing; and how to measure the 24 inches in relation to the smoke barrier or partition penetration needs to be clarified. The committee suggested providing a public comment that addressed the 24 inch measurement

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Guy McMann, Jefferson County Co., representing Colorado Associatoin of Plumbing and Mechanical Officials (CAPMO) (gmcmann@jeffco.us) requests Approve as Modified by

this Public Comment.

Modify as Follows:

2015 International Building Code

717.2.3 Smoke damper location. Smoke damper blades in the closed position shall be located at or ~~adjacent~~ parallel to but not more than 24 inches away from the smoke barrier or partition penetration. There shall be no inlets or outlets between the damper and the smoke barrier.

Commenter's Reason: The committee suggested that the position of the damper blades as it relates to the penetration be clarified. As a result the word "adjacent" was removed. Although this little known requirement is in the manufacturers instructions, many are unaware that this damper can be located outside of the wall. The problem is the instructions are difficult to come by for inspectors as only one set is provided for a shipment of many dampers. Knowing this application is available will aid all who use this Section.

FS106-15

FS112-15
717.5.2 (IMC 607.5.2)

Proposed Change as Submitted

Proponent : James Peterkin, representing Self (jpeterki@heery.com)

2015 International Building Code

Revise as follows:

717.5.2 Fire barriers. Ducts and air transfer openings of *fire barriers* shall be protected with *approved fire dampers* installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for *interior exit* stairways and ramps and exit passageways, except as permitted by Sections 1023.5 and 1024.6, respectively.

Exception: *Fire dampers* are not required at penetrations of *fire barriers* where any of the following apply:

1. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the fire-resistance-rated assembly.
2. Ducts are used as part of an *approved* smoke control system in accordance with Section 909 and where the use of a *fire damper* would interfere with the operation of a smoke control system.
3. Such walls are penetrated by fully ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Flexible connections shall be permitted in the following locations:

   1. Non-metal flex connections shall be permitted at the duct connection to the Air Handling Unit or Equipment located within the mechanical room.
   2. Non-metal flex connections shall be permitted from an overhead metal duct to a ceiling diffuser within the same room.

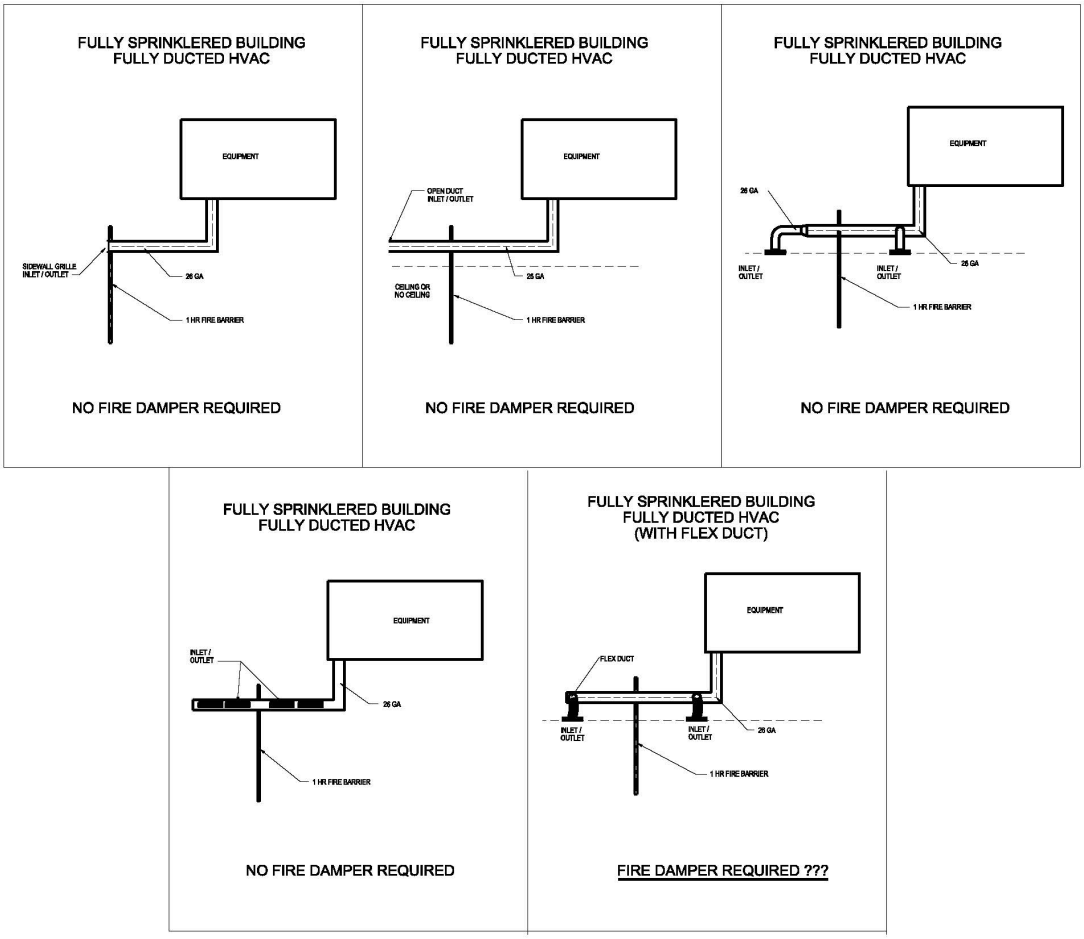
Reason: The code currently implies that any flex duct (or equipment flex connections) negates the use of the exception for fire dampers in 1 hour walls in fully ducted, fully sprinklered buildings.

The code permits the omission of the fire damper for a metal duct system that terminates either at a wall (such as a sidewall grille) or continues on to a duct opening past the fire barrier and has openings in the duct ("continuous from the air-handling appliance or equipment to the air outlet and inlet terminals"). This section

does not even prohibit openings to be on both sides of the duct as long as the openings are in metal duct. However, for some reason, if flex duct is used to connect a metal duct to a ceiling diffuser (standard practice) this triggers the requirement for a fire damper. See attached sketch.
The flex connection within the concealed space does not constitute a greater hazard then other conditions that would permit the omission of the fire dampers.

Likewise, an flex connection at the AHU within the mechanical space does not constitute a hazard that should trigger the fire damper within the system

As noted above, this exception only applies in fully sprinklered buildings.



Cost Impact: Will not increase the cost of construction
The proposed wording will clear up this interpretation and reduce the cost of fire damper installation and maintenance in locations that do not constitute a significant hazard.

FS112-15 : 717.5.2-PETERKIN5245

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: testing labs are not comfortable with only ASTM E84 testing – perhaps additional listings based on other testing should be required; requirements seem to apply to all occupancies, which is contrary to what the proponent discusses in the reason statement; and the minimum distance from a wall penetration to the flexible connections should be specified and justified.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : John Williams, CBO, representing Adhoc Healthcare Committee (AHC@iccsafe.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

717.5.2 Fire barriers. Ducts and air transfer openings of *fire barriers* shall be protected with *approved fire dampers* installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for *interior exit* stairways and ramps and exit passageways, except as permitted by Sections 1023.5 and 1024.6, respectively.

Exception: *Fire dampers* are not required at penetrations of *fire barriers* where any of the following apply:

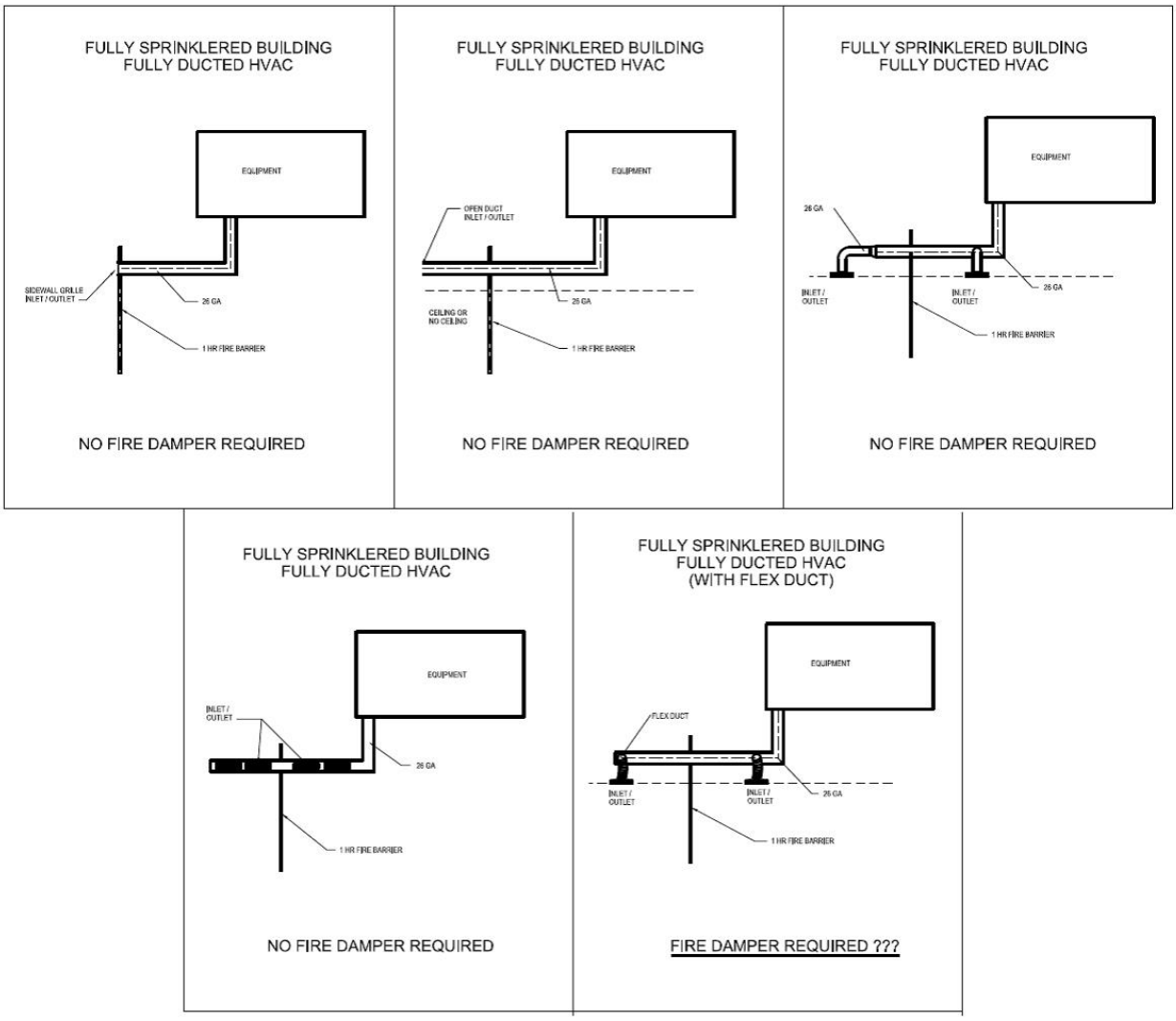
1. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the fire-resistance-rated assembly.
2. Ducts are used as part of an *approved* smoke control system in accordance with Section 909 and where the use of a *fire damper* would interfere with the operation of a smoke control system.
3. Such walls are penetrated by fully ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Flexible ~~connections shall~~ air connectors shall not be ~~permitted~~ prohibited in fully ducted sheet steel duct systems where the installation meets either of the following ~~locations~~:

   1. ~~Non-metal flex connections shall be permitted at the duct connection~~ Flexible air connectors are installed to ~~the Air Handling Unit or Equipment~~ connect ducts to air handling equipment and such connectors are located entirely within the mechanical room that contains the air handling equipment.
   2. ~~Non-metal flex connections shall be permitted from~~ Flexible air connectors are installed to connect an overhead metal duct to a ceiling diffuser and such connector is located entirely within the same room as the ceiling diffuser. The flexible air connectors shall not pass through any walls, floors or ceilings.

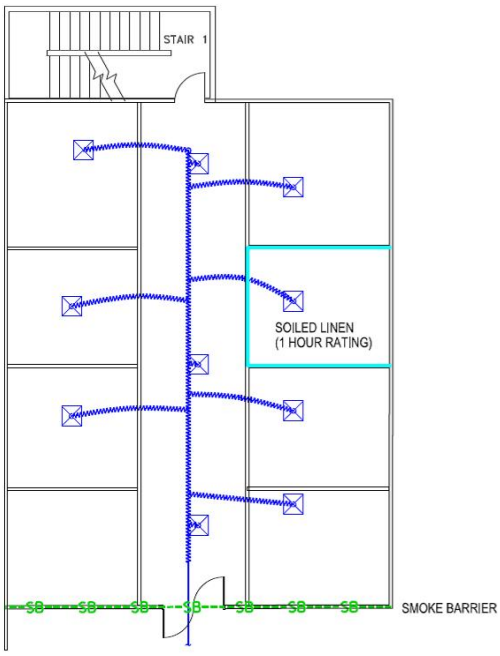
Commenter's Reason: The intention of this code change is to coordinate with the requirements already established in the International Mechanical Code. The intention is to maintain the allowance of flexible connectors at the terminal end of hard ductwork within the room of the air register. This code change also reflects current allowances made in the International Mechanical Code, including Section 603.9 for flexible connectors at air handling equipment, and Section 603.6.2 for flexible air connectors at ceiling diffusers. This public comment maintains the requirements of the IMC, including:

· Limiting the length of the flexible connector to 14 feet actual length.
· Requiring the flexible connector to be tested in accordance with UL 181.
· Requiring use only at the end of hard ductwork.
· Maintains the requirement for hard ductwork to pass through the barrier.

This allows constructability of a fully ducted system, and maintains the integrity of the system throughout the building.

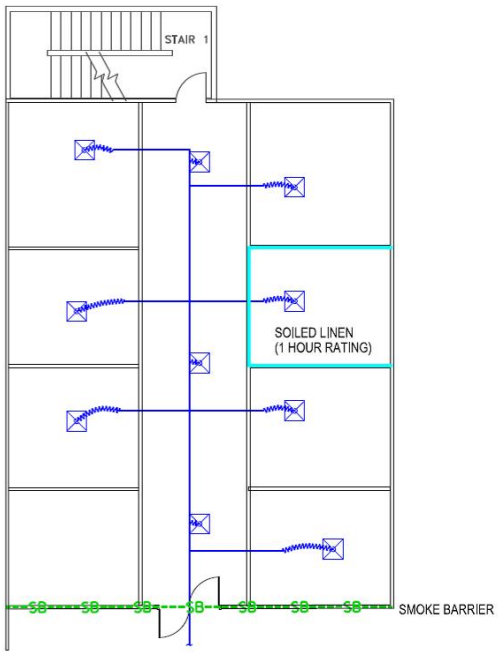


It is not the intention of the code change to allow flexible ducts through any vertical barriers. The flexible ductwork is only to be allowed within a room, and above the ceiling. See the sketch below to better clarify the intention.



ALL FLEX DUCT

NOT ACCEPTABLE



ONLY FLEX AT CONNECTION TO FINAL TERMINALS

ACCEPTABLE

The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory 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. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: Adhoc Healthcare.

FS112-15

FS115-15
717.5.3 (IMC 607.5.5)

Proposed Change as Submitted

Proponent : Raymond Grill, Arup (ray.grill@arup.com)

2015 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 *approved* fire and smoke *dampers* installed in accordance with their listing.

Exceptions:

1. *Firedampers* are not required at penetrations of shafts where any of the following criteria are met:
    - 1.1. Steel exhaust subducts are extended not less than 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside.
    - 1.2. Penetrations are tested in accordance with ASTM E 119 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 *firedamper* 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, *smokedampers*~~Smoke dampers are not required at penetrations of shafts ~~where all of the following criteria~~ in buildings that are ~~met:~~
    - 2.1. ~~Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed~~ equipped throughout with ~~steel exhaust subducts, having a minimum wall thickness of 0.0187-inch (0.4712 mm) (No. 26 gage).~~
    - ~~2.2. The subducts extend not less than 22 inches (559 mm) vertically.~~
    - 2.2. ~~An exhaust fan is installed at the upper terminus of the shaft that is powered continuously~~ an automatic sprinkler system in accordance with ~~the provisions of~~ Section ~~909.11, so as to maintain a continuous upward airflow to the outside~~ 903.3.1.1.
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/smokedampers* are not required in kitchen and clothes dryer exhaust systems where installed in accordance with the *International Mechanical Code*.

Reason: 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. Fancoil 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 sprinker 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: Will not increase 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.

Analysis: Code change proposals FS 114 and FS 115 propose revisions to Section 717.5.3. The committee needs to make its intent clear with respect to these revisions.

FS115-15 : 717.5.3-GRILL5132

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: This proposal deletes portions of the text that are currently working well, without justification; the provisions for the continuously running fan at the upper terminus needs to stay as it is very effective; and if substantiation was provided this could be a good change as it would save construction costs.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Raymond Grill, representing SArup - Self (ray.grill@arup.com) requests Approve as Submitted.

Commenter's Reason: The committee's statement that the provisions are working well is erroneous. Smoke dampers were added to the code with no justification. There has not been any issues with fire or smoke spread in shafts of sprinklered

buildings. The cost is extreme. These devices are also difficult to maintain and test.

FS115-15

FS118-15
717.5.5 (IMC 607.5.4)

Proposed Change as Submitted

Proponent : Vickie Lovell, InterCode Incorporated, representing Air Movement Control Association International (vickie@intercodeinc.com)

2015 International Building Code

Revise as follows:

717.5.5 Smoke barriers. A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *smoke barrier*. *Smoke dampers* and *smoke damper* actuation methods shall comply with Section 717.3.3.2.

Exceptions:

1. *Smoke dampers* are not required where the openings in ducts are limited to a single *smoke compartment* and the ducts are constructed of steel.
2. Smoke dampers are not required in smoke barriers required by Section 407.5 for Group I-2, Condition 2—where the HVAC system is fully ducted in accordance with Section 603 of the *International Mechanical Code* and where buildings are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and equipped with quick-response sprinklers in accordance with Section 903.3.2. <u>For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.</u>

Reason: Smoke barrier walls are used to divide areas of a building into separate smoke compartments so that occupants can be evacuated or relocated to adjacent smoke compartments or other areas of the building. They are also used to enclose areas of refuge and or elevator lobbies. Although not required by the IBC, smoke barriers can also be used as part of a smoke control system, accessible means of egress, and compartmentation of underground buildings. IBC Section 709.3 "Fire-resistance rating" states that a 1-hour fire-resistance rating is required for smoke barriers. In addition to a 1 hour fire resistance rating for the smoke barrier, the IBC also requires that all the elements such as doors, penetrations, joints and ducts of a smoke barrier have quantifiable resistance to smoke/air leakage. Smoke barriers are required to be permanently identified and marked with signs or stenciling with wording that requires that openings should be protected after construction and during ongoing maintenance and repairs.
Without any technical justification other than the cost of installation and maintenance of a smoke damper, smoke dampers were removed as duct opening protection in a smoke barrier in fully ducted HVAC systems. No meaningful supporting data was provided to show that eliminating a smoke damper in a smoke barrier duct opening, and replying solely on the sprinkler system and the duct itself is an equivalent alternative to a 1 hour of fire resistance rated assembly, or would satisfy the

requirement to limit the migration of smoke and toxic gases if the duct breaks away from the smoke barrier wall. Therefore this proposed text has been added to better define when the exception for smoke dampers should apply based on the construction of the HVAC system. It has excerpted from the exception permitted in fire partitions (also fire rated for 1 hour) for fire dampers in fully ducted systems in sprinklered buildings as follows:

> 717.5.4 Fire partitions, Exception #4. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction because the code section already requires a fully ducted system in order to eliminate a smoke damper. This proposal brings into this section the description of what a fully ducted system is, which the code already defined in 717.5.4 Fire partitions.

FS118-15 : 717.5.5-LOVELL4473

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: the provisions would be better placed in definitions of fully ducted system. Proponents should consider combining FS112 and FS118 with revised text and submitting a public comment.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : John Williams, CBO, representing Adhoc Healthcare Committee (AHC@iccsafe.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

717.5.5 Smoke barriers. A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *smoke barrier*. *Smoke dampers* and *smoke damper* actuation methods shall comply with Section 717.3.3.2.

Exceptions:

1. *Smoke dampers* are not required where the openings in ducts are limited to a single *smoke compartment* and the

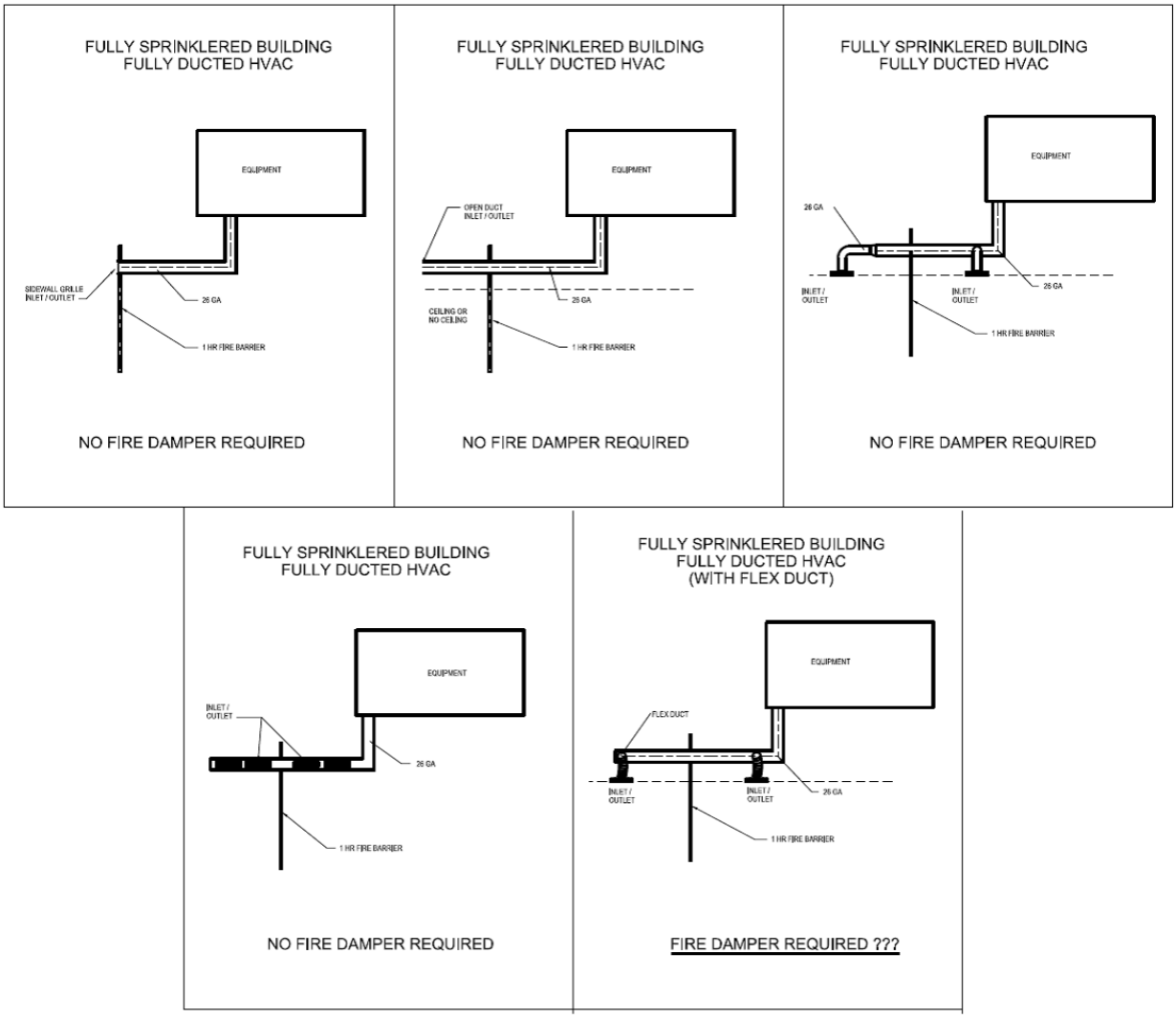
ducts are constructed of steel.

2. Smoke dampers are not required in smoke barriers required by Section 407.5 for Group I-2, Condition 2—where the HVAC system is fully ducted in accordance with Section 603 of the *International Mechanical Code* and where buildings are equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and equipped with quick-response sprinklers in accordance with Section 903.3.2. ~~For~~ Flexible air connectors shall not be prohibited in fully ducted sheet steel duct systems where the ~~purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part~~ installation meets either of the ~~structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness~~ following.
    2.1. Flexible air connectors are installed to connect ducts to air handling equipment and ~~shall be continuous from~~ such connectors are located entirely within the ~~air-handling appliance or equipment to~~ mechanical room that contains the air ~~outlet~~ handling equipment.
    2.2. Flexible air connectors are installed to connect an overhead metal duct to a ceiling diffuser and ~~inlet terminals~~ such connector is located entirely within the same room as the ceiling diffuser. The flexible air connectors shall not pass through any walls, floors or ceilings.

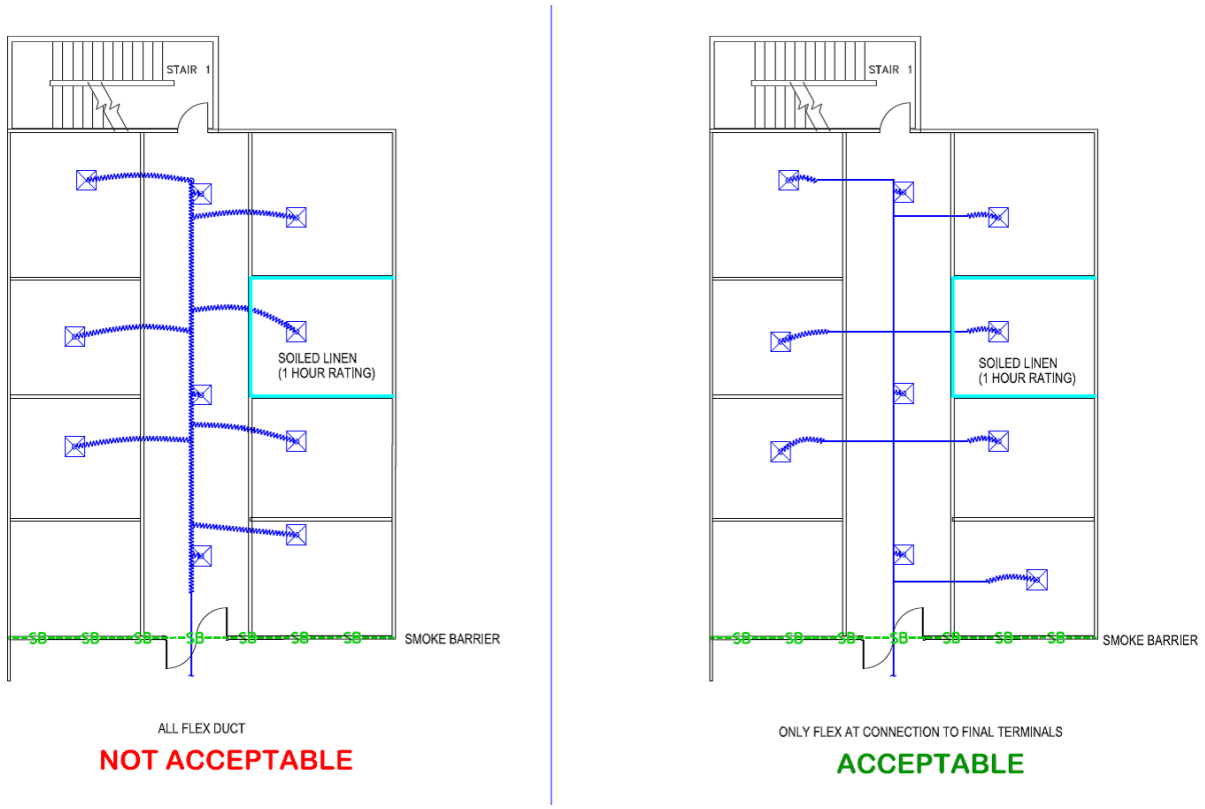
Commenter's Reason: The intention of this code change is to coordinate with the requirements already established in the International Mechanical Code, and better define a fully ducted system better than the originally proposed language. At the recommendation of the Committee, the proposed languages matches with that of FS112-15. The intention is to maintain the allowance of flexible connectors at the terminal end of hard ductwork within the room of the air register. This code change also reflects current allowances made in the International Mechanical Code, including Section 603.9 for flexible connectors at air handling equipment, and Section 603.6.2 for flexible air connectors at ceiling diffusers. This public comment maintains the requirements of the IMC, including:

• Limiting the length of the flexible connector to 14 feet actual length.
• Requiring the flexible connector to be tested in accordance with UL 181.
• Requiring use only at the end of hard ductwork.
• Maintains the requirement for hard ductwork to pass through the barrier.

This allows constructability of a fully ducted system, and maintains the integrity of the system throughout the building.



It is not the intention of the code change to allow flexible ducts through any vertical barriers. The flexible ductwork is only to be allowed within a room, and above the ceiling. See the sketch below to better clarify the intention.



The ICC Ad Hoc Committee on Healthcare (AHC) has just completed its 4th year. The

AHC was established by the ICC Board to evaluate and assess contemporary code issues relating to hospitals and ambulatory 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. Information on the AHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the AHC effort can be downloaded from the AHC website at: Adhoc Healthcare.

FS118-15

FS121-15 Part I

718.3.2

Proposed Change as Submitted

Proponent : Stephen DiGiovanni, Clark County Building Department, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov)

2015 International Building Code

Revise as follows:

718.3.2 Groups R-1, R-2, R-3 and R-4. Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more *dwellingunits*, in Group R-3 buildings with two *dwellingunits* and in Group R-4 buildings. Draftstopping shall be located above and in line with the *dwellingunit* and *sleeping unit* separations.

Exceptions:

1. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers in accordance with Section 903.3.1.1 are installed in the combustible concealed spaces where the draftstopping is being omitted.

Reason: The requirement to have an NFPA 13R sprinkler system protect combustible concealed spaces contradicts the intent of a 13R system. The NFPA 13R code specifically excludes the installation of sprinklers in combustible concealed spaces. Section 6.6.6 of NFPA 13R, 2010 edition (the edition referenced by the 2012 IBC), reads as follows:

"**6.6.6** Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, noncombustible elevator shafts where the elevator cars comply with ANSI A17.1, *Safety Code for Elevators and Escalators*, and other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment."

Because NFPA 13R specifically does not include within its scope the installation of sprinklers in concealed spaces, there are no criteria within NFPA 13R that are suitable for the protection of concealed spaces. NFPA 13, on the other hand, sets forth requirements for protecting concealed combustible spaces. As such, NFPA 13 has suitable design criteria for protection of concealed combustible spaces. Specifically, NFPA 13 provides "Section 8.16.1 Concealed Spaces" (too lengthy to retype). This section sets forth the concealed spaces where sprinklers are required, methods to mitigate sprinklers in concealed spaces, the density criteria for the sprinklers, provisions for localized protection of combustibles, and sprinkler head listing requirements for protection of spaces that of shallower heights.

Because NFPA 13R does not have design criteria for the protection of combustible concealed spaces, it is not appropriate to refer to that standard for protection of concealed combustible spaces. This amendment seeks to require that protection of concealed combustible spaces be provided in an appropriate manner, using the only recognized reference sprinkler code that provides criteria for protection of concealed combustible spaces.

Cost Impact: Will not increase the cost of construction
This proposal does not increase the cost of construction, as the requirements for sprinklers currently exist, and are being clarified only.

FS121-15 Part I :
718.3.2-DIGIOVANNI3829

Public Hearing Results

Part I

Committee Action: Disapproved

Committee Reason: The committee preferred their action on FS42 and that these revisions were unnecessary.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Stephen DiGiovanni, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

718.3.2 Groups R-1, R-2, R-3 and R-4. Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more *dwellingunits*, in Group R-3 buildings with two *dwellingunits* and in Group R-4 buildings. Draftstopping shall be located above and in line with the *dwellingunit* and *sleeping unit* separations.

~~Exceptions~~ Exception:

1. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. ~~Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers in accordance with Section 903.3.1.1 are installed in the combustible concealed spaces where the draftstopping is being omitted.~~

Commenter's Reason: This proposal was rejected at the request of the submitter, in order to favor FS-42. Should FS-42 survive the Final Hearings, this public comment will be withdrawn.

This public comment moves to entirely remove the exception (rather than modify the exception) to no longer allow draft curtains to be exempted due to the installation of NFPA 13R systems.

The requirement to have an NFPA 13R sprinkler system protect combustible concealed spaces contradicts the intent of a 13R system. The NFPA 13R code specifically excludes the installation of sprinklers in combustible concealed spaces. Section 6.6.6 of NFPA 13R, 2010 edition (the edition referenced by the 2012 IBC), reads as follows:

"**6.6.6** Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, noncombustible elevator shafts where the elevator cars comply with ANSI A17.1, *Safety Code for Elevators and Escalators*, and other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment."

Because NFPA 13R specifically does not include within its scope the installation of sprinklers in concealed spaces, there are no criteria within NFPA 13R that are suitable for the protection of concealed spaces. NFPA 13, on the other hand, sets forth requirements for protecting concealed combustible spaces. As such, NFPA 13 has suitable design criteria for protection of concealed combustible spaces. Specifically, NFPA 13 provides "Section 8.16.1 Concealed Spaces" (too lengthy to retype). This section sets forth the concealed spaces where sprinklers are required, methods to mitigate sprinklers in concealed spaces, the density criteria for the sprinklers, provisions for localized protection of combustibles, and sprinkler head listing requirements for protection of spaces that of shallower heights.

Because NFPA 13R does not have design criteria for the protection of combustible concealed spaces, it is not appropriate to refer to that standard for protection of concealed combustible spaces. This amendment seeks to require that protection of concealed combustible spaces be provided in an appropriate manner, using the only recognized reference sprinkler code that provides criteria for protection of concealed combustible spaces.

FS121-15 Part I

FS121-15 Part II

718.4.2

Proposed Change as Submitted

Proponent : Stephen DiGiovanni, Clark County Building Department, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov)

2015 International Building Code

Revise as follows:

718.4.2 Groups R-1 and R-2. Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwellingunits* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwellingunit* separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Where *corridor* walls provide a *sleeping unit* or *dwellingunit* separation, draftstopping shall only be required above one of the *corridor* walls.
2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
3. In occupancies in Group R-2 that do not exceed four *storiesabovegrade plane*, the *attic* space shall be subdivided by *draftstops* into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.
4. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers <u>in accordance with Section 903.3.1.1</u> are installed in the combustible concealed space where the draftstopping is being omitted.

Reason: The requirement to have an NFPA 13R sprinkler system protect combustible concealed spaces contradicts the intent of a 13R system. The NFPA 13R code specifically excludes the installation of sprinklers in combustible concealed spaces. Section 6.6.6 of NFPA 13R, 2010 edition (the edition referenced by the 2012 IBC), reads as follows:

"**6.6.6** Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, noncombustible elevator shafts where the elevator cars comply with ANSI A17.1, *Safety Code for Elevators and Escalators*, and other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment."

Because NFPA 13R specifically does not include within its scope the installation of sprinklers in concealed spaces, there are no criteria within NFPA 13R that are

suitable for the protection of concealed spaces. NFPA 13, on the other hand, sets forth requirements for protecting concealed combustible spaces. As such, NFPA 13 has suitable design criteria for protection of concealed combustible spaces. Specifically, NFPA 13 provides "Section 8.16.1 Concealed Spaces" (too lengthy to retype). This section sets forth the concealed spaces where sprinklers are required, methods to mitigate sprinklers in concealed spaces, the density criteria for the sprinklers, provisions for localized protection of combustibles, and sprinkler head listing requirements for protection of spaces that of shallower heights.

Because NFPA 13R does not have design criteria for the protection of combustible concealed spaces, it is not appropriate to refer to that standard for protection of concealed combustible spaces. This amendment seeks to require that protection of concealed combustible spaces be provided in an appropriate manner, using the only recognized reference sprinkler code that provides criteria for protection of concealed combustible spaces.

Cost Impact: Will not increase the cost of construction
This proposal will not increase the cost of construction as the requirements currently exist, and are just being clarified by this proposal.

FS121-15 Part II :
718.4.2-DIGIOVANNI3830

Public Hearing Results

Part II

Committee Action: Disapproved

Committee Reason: The committee preferred their action on FS42 and that these revisions were unnecessary.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Stephen DiGiovanni, representing Southern Nevada Chapter of ICC (sdigiovanni@clarkcountynv.gov) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

718.4.2 Groups R-1 and R-2. Draftstopping shall be provided in *attics*, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more *dwellingunits* and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, *sleeping unit* and *dwellingunit* separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Where *corridor* walls provide a *sleeping unit* or *dwellingunit*

separation, draftstopping shall only be required above one of the *corridor* walls.

2. Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
3. In occupancies in Group R-2 that do not exceed four *storiesabovegrade plane*, the *attic* space shall be subdivided by *draftstops* into areas not exceeding 3,000 square feet (279 m^2) or above every two *dwellingunits*, whichever is smaller.
4. ~~Draftstopping is not required in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.2, provided that automatic sprinklers in accordance with Section 903.3.1.1 are installed in the combustible concealed space where the draftstopping is being omitted.~~

Commenter's Reason: This proposal was rejected at the request of the submitter, in order to favor FS-42. Should FS-42 survive the Final Hearings, this public comment will be withdrawn.

This public comment moves to entirely remove the exception (rather than modify the exception) to no longer allow draft curtains to be exempted due to the installation of NFPA 13R systems.

The requirement to have an NFPA 13R sprinkler system protect combustible concealed spaces contradicts the intent of a 13R system. The NFPA 13R code specifically excludes the installation of sprinklers in combustible concealed spaces. Section 6.6.6 of NFPA 13R, 2010 edition (the edition referenced by the 2012 IBC), reads as follows:

"**6.6.6** Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, crawl spaces, floor/ceiling spaces, noncombustible elevator shafts where the elevator cars comply with ANSI A17.1, *Safety Code for Elevators and Escalators*, and other concealed spaces that are not used or intended for living purposes or storage and do not contain fuel-fired equipment."

Because NFPA 13R specifically does not include within its scope the installation of sprinklers in concealed spaces, there are no criteria within NFPA 13R that are suitable for the protection of concealed spaces. NFPA 13, on the other hand, sets forth requirements for protecting concealed combustible spaces. As such, NFPA 13 has suitable design criteria for protection of concealed combustible spaces. Specifically, NFPA 13 provides "Section 8.16.1 Concealed Spaces" (too lengthy to retype). This section sets forth the concealed spaces where sprinklers are required, methods to mitigate sprinklers in concealed spaces, the density criteria for the sprinklers, provisions for localized protection of combustibles, and sprinkler head listing requirements for protection of spaces that of shallower heights.

Because NFPA 13R does not have design criteria for the protection of combustible concealed spaces, it is not appropriate to refer to that standard for protection of concealed combustible spaces. This amendment seeks to require that protection of concealed combustible spaces be provided in an appropriate manner, using the only recognized reference sprinkler code that provides criteria for protection of concealed combustible spaces.

FS124-15
720.1, 720.2.1

Proposed Change as Submitted

Proponent : Lamont Millspaugh, Reflectix, Inc., representing Reflective Insulation Manufacturers Association International (monty.millspaugh@reflectixinc.com)

2015 International Building Code

Revise as follows:

720.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and ~~all layers of~~ single and multilayer reflective ~~foil~~ insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613.

720.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-developed limitations do not apply to facings, coverings, and layers of reflective ~~foil~~ insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

Exception: All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613.

Reason: The stricken language "all layers" is redundant and could cause confusion. Furthermore, this is not the correct method for testing these types of products. ASTM E 84 procedures call for the entire product to be tested, not each component of the product.
The word "foil" is an outdated describer of reflective insulation products. Some do contain foil, but a majority of the industry has moved to metalized films. All reflective insulations require the same testing regiment independent of composition.

Cost Impact: Will not increase the cost of construction
This proposal will not increase the cost of construction. The proposal updates the material reference language within the code, in order to be current with standard industry practice.

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that removing "all layers" as it relates to single and multilayer reflective insulations was not appropriate as this is the general section, which is talking about all types of insulation.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Amanda Hickman, InterCode Incorporated, representing Reflective Insulation Manufacturers Association International (amanda@intercodeinc.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

720.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer *reflective plastic core insulation* shall comply with Section ~~2613~~ 2614.

720.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-developed limitations do not apply to facings, coverings, and ~~layers of~~ reflective insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

Exception: All layers of single and multilayer *reflective plastic core insulation* shall comply with Section ~~2613~~ 2614.

Commenter's Reason: While FS123 provides some of the necessary fixes to this

section, there are still inaccuracies within the section. The word "foil" is an outdated describer of reflective insulation products. Some do contain foil, but a majority of the industry has moved to metalized films. Also, this public comment corrects the section number to the correct section for these products.

FS124-15

FS125-15

720.1, 720.5.1 (New)

Proposed Change as Submitted

Proponent : Wesley Hall, Reflectix, Inc., representing Reflective Insulation Manufacturers Association International (wes.hall@reflectixinc.com)

2015 International Building Code

Revise as follows:

720.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations and radiant barriers fully laminated to the underside of a wood roof deck, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613.

Add new text as follows:

720.5.1 Radiant barrier fully laminated to the underside of a wood roof deck The use of radiant barrier fully laminated to the underside of a wood roof deck shall be permitted in any type of construction provided the low emittance side of the product is facing an air space below the roof deck with an *approved* roof covering. The fire classification of the wood roof deck including the radiant barrier shall not be lower than that of the wood roof deck in the absence of the radiant barrier.

Reason: The proposal adds necessary language to ensure that radiant barriers attached to wood roof decks are properly installed below an *approved* roof covering. The current language in the code does not include any reference to a very predominant product type in the market place for **almost 30 years**. This proposed language addresses this need.

- Product History Acceptance and Distribution
  - Of the top 100 U.S. builders, 87 utilize this product type
  - 650,000,000+ sq. ft. of this product is installed annually
- Current ASTM Standards include C 1313 and C 1744
- Codes that include Radiant Barrier:
  - HI-Chapter 181 of Title 3, Table 402.1.1.1, Section 402.1.1.6 and Section 402.1.1.8.1

    - TX-Austin, Chapter 25-12, Article 12. Energy Code, Section 402.6
    - FL-2010 Florida Building Code, Section 405.6.1, Figure 405.6.1 and Table 303.2 (ASTM Standards)
    - CA-Title 24, Part 6, Subsection 8, Section (f), Subsection 2, Table 151-B, Table 151-C, Table 151-D
- Additional supporting references:
    - ICC ES - AC220

Proper installation of radiant barrier systems are covered in "Radiant Barriers: A Question and Answer Primer", available from the Florida Solar Energy Center (http://www.fsec.ucf.edu/en/publications/html/fsec-en-15/), and the ORNL website offers a "Radiant Barrier Fact Sheet" (http://web.ornl.gov/sci/ees/etsd/btric/RadiantBarrier/RBFactSheet2010.pdf) and included in ASTM C 1744.

REFERENCES:

ASTM C 1313/C 1313M Standard Specification for Sheet Radiant Barriers for Building Construction Applications

ASTM C 1744 Practice for Installation and Use of Radiant Barrier Systems (RBS) in Commercial/Industrial Building Construction.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction. The proposal does not change requirements for existing materials but offers an additional option of alternate materials into the code.

FS125-15 : 720.1-HALL4563

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: The term fully laminated should be clarified with a definition; and testing needs to be provided to show how this might affect the fire-resistance-rating of a roof assembly.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Amanda Hickman, InterCode Incorporated, representing Reflective Insulation Manufacturers Association International (amanda@intercodeinc.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

720.1 General. Insulating materials, including facings such as vapor

retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations and *radiant barriers* fully laminated to the underside of a ~~wood roof~~ combustible deck, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer *reflective plastic core insulation* shall comply with Section ~~2613~~ 2614.

720.5.1 Radiant barrier fully laminated to the underside of a ~~wood roof~~ combustible deck The use of *radiant barrier* fully laminated to the underside of a ~~wood roof~~ combustible deck shall be permitted in any type of construction provided the low emittance side of the product is facing an air space below the roof deck ~~with an *approved* roof covering. The fire classification of the wood roof deck including the radiant barrier shall not be lower than that of the wood roof deck in the absence of the radiant barrier~~.

Commenter's Reason: The proposal adds necessary language to ensure that when radiant barriers are attached to combustible decks they are properly installed. The current language in the code does not include any reference to a very predominant product type in the market place for almost 30 years.

FS125-15

FS126-15

720.1, 720.1.1 (New), 2615 (New), 2615.1 (New), 2615.2 (New), 2615.3 (New), 2615.3.1 (New), 2615.3.2 (New)

Proposed Change as Submitted

Proponent : Amanda Hickman, InterCode Incorporated, representing Reflective Insulation Manufacturers Association International (amanda@intercodeinc.com)

2015 International Building Code

Delete and substitute as follows:

720.1 General. ~~Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.~~

~~**Exceptions:**~~

1. ~~Fiberboard insulation shall comply with Chapter 23.~~
2. ~~Foam plastic insulation shall comply with Chapter 26.~~
3. ~~Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.~~
4. ~~All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613.~~

Insulating materials, including the following, shall comply with the requirments of this section.

1. Facings such as vapor retarders and vapor-permeable membranes and similar coverings.
2. All layers of single and multilayer reflective foil insulations, including reflective plastic core insulation, complying with Section 2614.
3. Radiant barriers with plastic core, complying with Section 2615, when installed below the roof deck with an air space between the roof deck and the radiant barrier.

Exceptions

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the International Mechanical Code.

Add new text as follows:

720.1.1 Flame Spread and Smoke Indexes Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

SECTION 2615 RADIANT BARRIER WITH PLASTIC CORE

2615.1 General The provisions of this section shall govern the requirements for radiant barrier with plastic core installed below the roof deck with an air space between the roof deck and the radiant barrier.

2615.2 Identification. Packages and containers of radiant barriers with plastic core delivered to the job site shall show the manufacturer's or supplier's name, product identification and manufacturer's installation instructions and information sufficient to determine that the end use will comply with the code requirements.

2615.3 Fire Testing These materials shall comply with either 2615.3.1 or 2615.3.2:

2615.3.1 Surface-burning characteristics Radiant barrier with plastic core installed below the roof deck with an air space between the roof deck and the radiant barrier shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E 84 or UL 723. The test specimen preparation and mounting requirements shall be in accordance with ASTM E 2599.

2615.3.2 Room corner test heat release Radiant barriers with plastic core installed below the roof deck with an air space between the roof deck and the radiant barrier shall comply with the acceptance criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 in the configuration of final installation.

Reason: This proposal addresses three issues that currently exist in this code section.

1. It corrects an editorial mistake in section 720.1 exception 4. The exception should reference 2614 instead of 2613. This exception is being rewritten in affirmative language rather than as an exception. The change recognizes that the reflective insulations explicitly covered by the code (in section 2614) are reflective plastic core insulations.
2. NO technical changes have been made to this section, except for adding radiant barriers to the materials listed.
3. This proposal establishes a new section on radiant barriers with plastic core that are installed with an air space between the radiant barrier and the roof deck. A new section 2615 is proposed for these insulation materials. This is a different and distinct product category separate from the existing section 2614 Reflective Plastic Core Insulation. Radiant barriers with plastic core provide different types of performances, are installed in different locations and are labeled differently than reflective plastic core insulation.

This new language is needed in order to ensure that these radiant barrier materials

comply with the appropriate fire tests and are properly marked or labeled and installed correctly. The sections in Chapter 26 address different types of plastic which is why this technology has been included in this section. These product types are a long-standing, energy-saving technology having first been evaluated in the late 1950s (Joy, 1958). As far back as the 1970s, sheets of highly reflective surfaces called Radiant Barrier Systems (RBS) have been installed.

Product design innovations have resulted in a radiant barrier product configuration that requires the same treatment as *reflective plastic core insulation* as it pertains to flame/smoke safety. This proposal will require the same flame/smoke requirements for radiant barriers as those determined by UL 723 or ASTM E 84 or NFPA 286.

Proper installation of radiant barrier systems are covered in "Radiant Barriers: A Question and Answer Primer", available from the Florida Solar Energy Center (http://www.fsec.ucf.edu/en/publications/html/fsec-en-15/), and the ORNL website offers a "Radiant Barrier Fact Sheet" (http://web.ornl.gov/sci/ees/etsd/btric/RadiantBarrier/RBFactSheet2010.pdf) and the products are specified in ASTM C 1744.

REFERENCES:

ASTM C 1313/C 1313M Standard Specification for Sheet Radiant Barriers for Building Construction Applications
ASTM C 1744 Practice for Installation and Use of Radiant Barrier Systems (RBS) in Commercial/Industrial Building Construction
Joy, F.S. (1958). Improving Attic Space Insulating Values. ASHRAE Transaction, 64 251-266

Cost Impact: Will not increase the cost of construction
This code change proposal will not increase the cost of construction. The proposal does not change the requirements for existing materials but offers an additional option of alternative materials to the code.

FS126-15 : 720.1-HICKMAN4420

Public Hearing Results

Committee Action: Disapproved

Committee Reason: Testing needs to be provided to show how radiant barriers might affect the fire-resistance-rating of a roof assembly.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Amanda Hickman, InterCode Incorporated, representing Reflective Insulation Manufacturers Association International (amanda@intercodeinc.com) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

RADIANT BARRIER WITH PLASTIC CORE. A flexible *radiant barrier* that has a thermoplastic or thermosetting polymer interlayer that is packaged in rolls.

720.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations and *radiant barriers with plastic core*, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer *reflective plastic core insulation* shall comply with Section ~~2613~~ 2614.
5. *Radiant barriers with plastic core*, when installed below the roof deck with an air space between the roof deck and the *radiant barrier* shall comply with Section 2615.

SECTION 2615 RADIANT BARRIER WITH PLASTIC CORE

2615.1 General. The provisions of this section shall govern the requirements for *radiant barriers with plastic core* installed below the roof deck with an air space between the roof deck and the *radiant barrier*.

2615.2 Identification Packages and containers of *radiant barriers with plastic core* delivered to the job site shall show the manufacturer's or supplier's name, product identification and manufacturer's installation instructions and information sufficient to determine that the end use will comply with the code requirements.

2615.3 Fire Testing These materials shall comply with either 2615.3.1 or 2615.3.2.

2615.3.1 Surface-burning characteristics *Radiant barriers with plastic core* installed below the roof deck with an air space between the roof deck and the *radiant barrier* shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E 84 or UL 723. The test specimen preparation and mounting requirements shall be in accordance with ASTM E 2599.

2615.3.2 Room corner test heat release *Radiant barriers with plastic core* installed below the roof deck with an air space between the roof deck and the *radiant barrier* shall comply with the acceptance criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 in the configuration of final installation.

Commenter's Reason: There is nothing in the code that disallows these products. And, in fact, radiant barriers with plastic core are widely used throughout the

country, and, therefore, code language is needed to ensure that radiant barrier materials comply with the appropriate fire tests and are properly marked or labeled, and installed correctly. A new section (2615) has been proposed to address these needs. Secondly, this proposal corrects an editorial mistake in Section 720.1 Exception 4. The exception should reference Section 2614 which is the correct section, instead of 2613.

FS126-15

FS127-15

720.1, 720.5.1 (New), 720.5.2 (New), 202 (New)

Proposed Change as Submitted

Proponent : Vickie Lovell, InterCode Incorporated, representing Reflective Insulation Manufacturers Association International (vickie@intercodeinc.com)

2015 International Building Code

Revise as follows:

720.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations and interior radiation control coatings, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core insulation shall comply with Section 2613.

Add new text as follows:

720.5.1 Interior radiation control coatings (IRCC) applied to the underside of a non-combustible roof deck. Interior radiation control coatings applied to the underside of a non-combustible roof deck shall face an interior air space and have an *approved* roof covering. The IRCC shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

720.5.2 Interior radiation control coatings (IRCC) applied to the underside of a wood roof deck Interior radiation control coatings applied to the underside of a wood roof deck shall face an interior air space and have an *approved* roof covering. The Fire Classification of the wood roof deck including the IRCC shall not be lower than that of the wood roof deck in the absence of the IRCC.

Add new definition as follows:

SECTION 202 DEFINITIONS

INTERIOR RADIATION CONTROL COATING (IRRC). A coating, having an emittance of 0.25 or less, applied as a liquid to building assemblies by roller or spray.

Reason: This proposal addresses the following issues that currently exist in this code section.

1. The proposal adds necessary language to ensure that interior radiation control coatings in roof systems are properly installed below an approved roof covering. The current language in the code does not include any reference to a very predominant product type in the market place. This proposed language addresses this need.
2. This proposal adds a new definition and section for Interior Radiation Control Coatings (IRCC). It also adds the term to the changing language of this section to ensure that the IRCC **WHEN** installed complies with the fire safety requirements in this section.

As characterized by ASTM, an Interior Radiation Control Coating (IRCC) is a non-thickness dependent, low emittance coating. When applied to building materials such as plywood, OSB or metal roofing, according to the manufacturer's installation instruction, it lowers the normal surface emittance of these materials to 0.25 or lower.

An IRCC works by changing the emittance of the surface where it is applied. Building products, such as wood, brick, painted surfaces and plasterboard exhibit high emissivities (0.7 - 0.95). When heated above the temperature of adjacent surfaces, they radiate most of their heat energy to cooler surfaces. An IRCC works by lowering their surface emittance to 0.25 or lower, lessening their ability to radiate heat.

An IRCC is normally applied using airless spray equipment, resulting in very low labor costs and greatly reduced installation times. Also, a water based IRCC can be safely installed in existing structures where the costs of installing foil or film products may be prohibitive or impractical.

REFERENCED STANDARD:

ASTM C 1321 Standard Practice for Installation and Use of Interior Radiation Control Coating Systems (IRCCs) in Building Construction.

Cost Impact: Will not increase the cost of construction
The code change proposal will not increase the cost of construction. The proposal does not change requirements for existing materials, but offers an additional option of alternative materials into the code.

FS127-15 : 720.1-LOVELL4431

Public Hearing Results

Committee Action: Disapproved

Committee Reason: Testing needs to be provided to show how interior radiation control coatings might affect the fire-resistance-rating of a roof assembly. Also, testing needs to be provided to substantiate that this material will have no effect on the roof classification. Lastly, installation requirements should not be part of the definition.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Amanda Hickman, InterCode Incorporated, representing Reflective Insulation Manufacturers Association International (amanda@intercodeinc.com) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

SECTION 202 DEFINITIONS

INTERIOR RADIATION CONTROL COATING (IRRC). A coating, having an emittance of 0.25 or less, applied as a liquid to building assemblies.

720.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations and *interior radiation control coatings*, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core insulation shall comply with Section ~~2613~~ 2614.

720.5.1 Interior radiation control coatings (IRCC) applied to the underside of a non-combustible deck. When installed, *interior radiation control coatings* applied to the underside of a non-combustible deck shall face an interior air space and have an *approved* roof covering. The *IRCC* shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

720.5.2 Interior radiation control coatings (IRCC) applied to the underside of a combustible deck.
When installed, interior radiation control coatings applied to the underside of a combustible deck shall face an interior air space.

Commenter's Reason: There is nothing in the code that prohibits the use of this product. And, in fact, interior radiation control coatings are currently being installed throughout the country. Therefore, it is critical that language is added to the code to ensure that WHEN interior radiation control coatings in roof systems are installed, they are done so properly below an approved roof covering and that the IRCC complies with the fire safety requirements in the proposed section.

FS127-15

FS128-15
Table 721.1(2)

Proposed Change as Submitted

Proponent : Mike Fischer, Kellen Company, representing The Gypsum Association (mfischer@kellencompany.com)

2015 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
		$3^5/_8$" No. 16 gage steel studs at 16" on center or 2" × 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 ASTM C 216				

15. Exterior or interior walls	15-2.4[d]	installed in accordance with Section 1405.6 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.	---	---	$8^1/_2$	—
15. Exterior or interior walls (cont.)	15-3.1	One layer 1" thick liner panel, inserted between 2 ½" floor and ceiling runners with 2 ½" C-H, C-T or I-shape studs between panels. 2 layers of 5/8" Type X gypsum board or gypsum panel products applied parallel or at right angles to studs	---	---	3-3/4	---

		with 1" long drywall screws spaced 24" on center on base layer and 1-5/8" long drywall screws spaced 12" on center on face layer.				
15. Exterior or interior walls (cont.)	15-3.2	One layer 1" thick liner panel, inserted between 2 ½" floor and ceiling runners with 2 ½" C-H, C-T or I-shape studs between panels. 1 layer of 5/8" Type X gypsum board or gypsum panel products applied parallel or at right angles to each side of studs with 1" long drywall screws spaced 12" on center.	---	---	3-3/4	---

(Portions of table and footnotes not shown remain unchanged)

Reason: This proposal adds in two new configurations for wall assemblies to Table 721.1(2).
These assemblies are found in the latest edition of the Gypsum Association Fire-Resistance Design Manual (the first one is based on GA File Nos. WP 7054, WP 7058, WP 7060, WP 7065.2, WP 7065.4, WP 7065.5, WP 7076, WP 7078, and WP 7265; the second one is based on WP 7059, WP 7061, WP 7077, and WP 7257) and are consistent with UL designs (U415, U417, U438, U497, U498, V455, V473, and V493).

Inclusion of these additional configurations provide appropriate guidance for designers to achieve a 2-hour rating with a minimum assembly thickness of 3-3/4"

Cost Impact: Will not increase the cost of construction

The proposal adds additional options for the user of the code to meet current testing provisions and adds no new additional requirements to the code.

FS128-15 : T721.1-FISCHER5358

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee agreed that these assemblies did not qualify for a 2 hour rating, rather a 1 hour rating.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Mike Fischer, Kellen, representing The Gypsum Association requests Approve as Submitted.

Commenter's Reason: The proposal was recommended for disapproval by the committee based on a misread of the requirements on the second shaftwall item. One of the committee members asked about the proposed 2 hour rating, mistakenly reading that the proposed assembly contained only a single layer of 5/8" Type X Gypsum board; the requirement is for a layer of gypsum board on EACH side of studs.

FS128-15

FS135-15

803.11 (New)

Proposed Change as Submitted

Proponent : Marcelo Hirschler, representing GBH International (gbhint@aol.com)

2015 International Building Code

Add new text as follows:

803.11 Laminated products factory-produced with a wood substrate Laminated products factory-produced with a wood substrate shall comply with one of the following:

1. The laminated product shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, of actual use, as described in Section 5.8 of NFPA 286.
2. The laminated product shall have a Class A, B, or C flame spread index and smoke developed index, based on the requirements of Table 803.1.1, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579.

Add new standard(s) as follows: ASTM E2579-13 Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Surface Burning

Reason: This language has not yet been incorporated into the IFC (which did incorporate the language dealing with on site applied facings in IFC section 803.7), because it wanted the IBC to take the lead. ASTM has developed mounting methods for both "facings or wood veneer intended to be applied on site over a wood substrate" and laminated products that are factory-produced and have a wood substrate. The concept is that facings that are produced as part of a commercial (factory-produced) panel are finished products and the manufacturer should be responsible to ensure that the product itself (the full panel) is safe and there is no need to discuss a substrate. It has been shown that, when veneers are applied over a wood substrate the resulting flame spread is much higher than when applied over gypsum board or over a non-combustible substrate. Therefore the requirement in ASTM E2579 is that the testing be done with the full product and, thus, there will no need to retest for different substrates. Similarly, NFPA 286 contains a section that addresses testing of wall covering materials, including facings applied on site and laminated products produced in the factory. Facings applied on site over wood substrates are tested using ASTM E2404.
Note that this proposal is not intended to replace existing section 803.11 but to be incorporated between existing sections 803.10 and 803.12. Note also that the proposal to add a clarification of the requirements for facings or wood veneers intended to be applied on site over a wood substrate is also intended to be incorporated as a new section between existing sections 803.10 and 803.12.

NFPA 286 language

5.8 Wall or Ceiling Covering Materials.

5.8.2 Where the wall or ceiling covering system is a factory produced wall panel, the adhesive shall be the same one used in the manufacture of the factory-produced wall or ceiling panel.

ASM E2579 - Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Surface Burning

1. Scope

1.1 This practice describes procedures for specimen preparation and mounting when testing wood products to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

1.2 This practice applies also to laminated products factory produced with a wood substrate (see 8.6). This practice does not apply to wood veneers or facings intended to be applied on site over a wood substrate, which are covered by Practice E2404.

1.3 Testing is conducted with Test Method E84.

ASTM E2404 – Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) Wall or Ceiling Coverings, and of Facings and Wood Veneers Intended to be Applied on Site Over a Wood Substrate, to Assess Surface Burning Characteristics

1. Scope

1.1 This practice describes procedures for specimen preparation and mounting when testing textile, paper or polymeric (including vinyl and expanded vinyl) wall or ceiling covering materials to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

1.2 This practice applies also to facings or wood veneers intended to be applied on site over a wood substrate (see 8.7). This practice does not apply to laminated products factory produced with a wood substrate, which are covered by Practice E2579.

1.3 Testing is conducted with Test Method E84.

Cost Impact: Will not increase the cost of construction
Clarifies the mounting method for factory produced panels mounted on wood substrates.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2579, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS135-15 : 803.11 (New)-HIRSCHLER4298

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee agreed that ASTM E2579 would be more appropriate for these products as it would be completely representative of the product makeup. Further, enforcement of these provisions is less burdensome as the code official and plan reviewer do not need to look at what specific substrate has been tested.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Kuma Sumathipala, American Wood Council , representing American Wood Council (ksumathipala@awc.org); Jason Smart, representing American Wood Council (jsmart@awc.org); Paul Coats, PE CBO, representing American Wood Council (pcoats@awc.org); David Tyree, representing American Wood Council (dtyree@awc.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

803.11 Laminated products factory-produced with a wood substrate ~~Laminated products factory-produced~~ Wall and ceiling finishes with ~~a wood substrate~~ factory-applied laminates shall comply with ~~one of the following:~~ Section 803.1

1. ~~The laminated product shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, of actual use, as described in Section 5.8 of NFPA 286.~~
2. ~~The laminated product shall have a Class A, B, or C flame spread index and smoke developed index, based on the requirements of Table 803.1.1, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579.~~

Commenter's Reason: The code development committee approved FS 135-15 on the basis that "*ASTM E2579 would be more appropriate for these products as it would be representative of the complete makeup. Further, enforcement of these provisions is less burdensome as the code official and plan reviewers do not need to look at what specific substrate has been used*." However, ASTM E84 already requires the use of ASTM E2579 for the purpose of mounting wood products. As such, half of the committee's recommendation is already met without the need for a revision to the IBC. We concur with the second half of the committee's recommendation and this public comment preserves it. Additionally, it eliminates the redundancy of references to ASTM E84 and NFPA 286 by reference to Section 803.1. Furthermore, the proposed interior finish requirement should apply to all laminated products equally, including, but not limited to, wood products. ASTM E84 references several mounting methods, including ASTM E2579 for wood products, for multiple types of interior finish products. A reference to ASTM E84 automatically requires the suitable mounting method for all such types of products without the need for a direct reference from the IBC.

FS135-15

FS136-15

803.11 (New)

Proposed Change as Submitted

Proponent : Marcelo Hirschler, representing GBH International (gbhint@aol.com)

2015 International Building Code

Add new text as follows:

803.11 Facings or wood veneers intended to be applied on site over a wood substrate Facings or veneers intended to be applied on site over a wood substrate shall comply with one of the following:

1. The facing or veneer shall meet the criteria of Section 803.1.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, as described in Section 5.9 of NFPA 286.
2. The facing or veneer shall have a Class A, B or C flame spread index and smoke-developed index, based on the requirements of Table 803.11, in accordance with ASTM E 84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.

Reason: This language has already been approved by the IFC (section 803.7). ASTM has developed mounting methods for both "facings or wood veneer intended to be applied on site over a wood substrate" and laminated products that are factory-produced and have a wood substrate. The IFC agreed to move ahead with this one (dealing with on site facings) but wanted the IBC to take the lead with the factory-produced ones. The concept is that these facings (applied on site) are basically the same as wall coverings and the manufacturer should be responsible for the facing only and needs to ensure that the material is safe and should test over the appropriate substrate. It has been shown that, when veneers are applied over a wood substrate the resulting flame spread is much higher than when applied over gypsum board or over a non-combustible substrate. Therefore the requirement in ASTM E2404 is that the testing be done over a standard wood substrate and, thus, there will no need to retest for different types of wood. Similarly, NFPA 286 contains a section that addresses testing of wall covering materials, including facings applied on site and laminated products produced in the factory. Panels including factory applied facings with wood substrates are tested using ASTM E2579.
Note that this proposal is not intended to replace existing section 803.11 but to be incorporated between existing sections 803.10 and 803.12. Note also that the proposal to add a clarification of the requirements for laminated products factory-produced with a wood substrate is also intended to be incorporated as a new section between existing sections 803.10 and 803.12.

NFPA 286 language

5.9 Laminated Products with Wood Substrates.

5.9.1 Laminated products shall be tested as they are intended to be installed.

5.9.1.1 The test specimens shall consist of the finished product, namely the combination of the facing or veneer, the adhesives or fasteners used, and the specific wood substrate that will be used.

5.9.2 If the laminated product consists of a facing or veneer intended to be applied on-site over a wood substrate, the facing or veneer shall be tested as described in 5.9.2.1 and 5.9.2.2.

5.9.2.1* The test specimens shall comply with the following:

(1) Specimens shall consist of the facing or veneer mounted on the "A" face of nominal 12 mm (15⁄32 in.) untreated plywood with a face veneer of Douglas fir.

(2) The plywood shall comply with NIST Voluntary Product Standard PS 1, Structural Plywood.

(3) The plywood shall carry one of the following grade stamps: (a) APA-The Engineered Wood Association (b) TECO, indicating that the plywood has been graded PS 1 A-B and is for exterior exposure (c) CSA Standard O121, Douglas Fir Plywood.

5.9.2.2 The adhesive used to attach the facing or veneer to the wood substrate in 5.9.2.1 shall be that specified by the manufacturer of the facing or veneer and applied in accordance with manufacturer's application instructions.

Also, for information, from NFPA 286:

5.8.9 Wall or Ceiling Coverings Intended to Be Applied over a Wood Substrate. If the wall or ceiling coverings are intended to be applied over a wood substrate, the specimens shall consist of the wall or ceiling covering mounted on untreated plywood, with a face veneer of Douglas fir. The plywood shall have the same thickness as the wood substrate used in actual installations, and shall comply with NIST Voluntary Product Standard PS 1-07, Structural Plywood. The plywood shall be marked with a grade stamp indicating that the plywood has been graded PS 1-07 A-B and is for exterior exposure. The grade stamp shall be issued by a quality control agency. Alternatively, the plywood shall be permitted to be stamped as conforming to CSA Standard O121, Douglas Fir Plywood.

ASTM E2404 – Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) Wall or Ceiling Coverings, and of Facings and Wood Veneers Intended to be Applied on Site Over a Wood Substrate, to Assess Surface Burning Characteristics

1. Scope

1.1 This practice describes procedures for specimen preparation and mounting when testing textile, paper or polymeric (including vinyl and expanded vinyl) wall or ceiling covering materials to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

1.2 This practice applies also to facings or wood veneers intended to be applied on site over a wood substrate (see 8.7). This practice does not apply to laminated products factory produced with a wood substrate, which are covered by Practice E2579.

1.3 Testing is conducted with Test Method E84.

ASM E2579 - Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Surface Burning Characteristics

1. Scope

1.1 This practice describes procedures for specimen preparation and mounting when testing wood products to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

1.2 This practice applies also to laminated products factory produced with a wood substrate (see 8.6). This practice does not apply to wood veneers or facings intended to be applied on site over a wood substrate, which are covered by Practice E2404.

1.3 Testing is conducted with Test Method E84.

Cost Impact: Will not increase the cost of construction
This clarifies the testing protocol.

FS136-15 : 803.11 (New)-HIRSCHLER4299

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee agreed that this proposal provides consistency with the International Fire Code and that testing in accordance with ASTM E2404 was appropriate in that facings are required to be tested over a wood substrate, which will yield conservative results.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Kuma Sumathipala, representing American Wood Council (ksumathipala@awc.org); Jason Smart, American Wood Council, representing American Wood Council (jsmart@awc.org); Paul Coats, PE CBO, representing American Wood Council (pcoats@awc.org); David Tyree, representing American Wood Council (dtyree@awc.org) requests Disapprove.

Commenter's Reason: The code development committee approved FS 136-15 as "*this proposal provided consistency with the International Fire Code and that testing in accordance with ASTM E2404 was appropriate in that facings are required to be tested over a wood substrate, which will yield conservative results*." However, ASTM E84 already requires the use of ASTM E2404 for the purpose of mounting paper, polymeric and textile wall and ceiling covering materials, facings or wood veneers intended to be applied on-site over a wood substrate. As such, the reference to ASTM E84 in Section 803.1.1 inherently prescribes ASTM E2404 as intended by the code development committee. Furthermore, FS 136-15 creates potential conflicts within the IBC by contradicting Section 803.2, which exempts material having a thickness less than 0.036 inches applied directly to the surface of walls or ceilings. Additionally, the proposal's title refers to "facings or *wood* veneers" while the rest of the proposed text refers to just "facings or veneers," creating further confusion. The code development committee supported this proposal, in part, for providing consistency with the IFC. It does not. The proposed text for the IBC is inconsistent with that in the IFC (Section 803.7).

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FS139-15

803.1, 803.1.1, 803.1.1.1 (New), 803.1.2, 803.1.2.1, 803.1.3, 803.1.3.1, 803.1.4, 803.5, 803.5.1 (New), 803.5.1.1 (New), 803.5.2 (New), 803.6, 803.7, 803.8, 803.9, 803.11

Proposed Change as Submitted

Proponent : Marcelo Hirschler, GBH International, representing GBH International (gbhint@aol.com)

2015 International Building Code

Revise as follows:

803.1 General. *Interior wall and ceiling finish* materials shall be classified for fire performance and smoke development in accordance with Section 803.1.1 or 803.1.2, except as shown in Sections ~~803.2~~ 803.1.3 through 803.13. Materials tested in accordance with Section ~~803.1.2~~ 80 3.1.1 shall not be required to be tested in accordance with Section ~~803.1.1~~ 803.1.2.

803.1.1 Interior wall and ceiling finish materials~~.~~ tested in accordance with NFPA 286 Interior wall and ceiling finish materials shall be classified in accordance with ~~ASTM E 84 or UL 723~~ NFPA 286 and comply with Section 803.1.1.1. ~~Such *interior finish* materials~~ Materials complying with Section 803.1.1.1 shall be ~~grouped in~~ considered to also comply with the ~~following classes in accordance with their flame spread and *smoke-developed indexes.*~~
requirements of a Class ~~A:= Flame spread index 0-25; smoke developed index 0-450.~~
~~Class B:= Flame spread index 26-75; smoke developed index 0-450.~~
~~Class C:= Flame spread index 76-200; smoke developed index 0-450.~~

~~**Exception:** Materials tested~~ , in accordance with Section 803.1.2.

Add new text as follows:

803.1.1.1 Acceptance Criteria for NFPA 286 The interior finish shall comply with the following:

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread tot he outer extremity of the sample on any wall or ceiling.
3. Flashover, as defined in NFPA 286, shall not occur.
4. The peak heat release rate throughout the test shall not exceed 800 kW.
5. The total smoke released throughout the test shall not exceed 1,000 m^2.

Revise as follows:

803.1.2 ~~Room corner test for interior~~ Interior wall or ceiling finish materials~~.~~ tested in accordance with ASTM E84 or UL 723
Interior wall ~~or~~ and ceiling finish materials shall be ~~permitted to~~ classified in

accordancew ith ASTM E 84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.
Class A: = Flame spread index 0-25; smoke-developed index 0-450.
Class B: = Flame spread index 26-75; smoke-developed index 0-450.
Class C: - Flame spread index 76-200; smoke-developed index 0-450.

Exception: Materials tested in accordance with ~~NFPA 286. Interior wall or ceiling finish materials tested~~ Section 803.1.1 and as indicated in ~~accordance with NFPA 286 shall comply with Section 803.1.2.1.~~ Sections 803.1.3 through 803.13.

~~**803.1.2.1 Acceptance criteria for NFPA 286.** The interior finish shall comply with the following:~~

1. ~~During the 40 kW exposure, flames shall not spread to the ceiling.~~
2. ~~The flame shall not spread to the outer extremity of the sample on any wall or ceiling.~~
3. ~~Flashover, as defined in NFPA 286, shall not occur.~~
4. ~~The peak heat release rate throughout the test shall not exceed 800 kW.~~
5. ~~The total smoke released throughout the test shall not exceed 1,000 m^2.~~

803.1.3 ~~Room corner test for textile~~ Interior wall ~~coverings~~ and ~~expanded vinyl wall coverings.~~ ceiling finish materials with different requirements ~~Textile wall coverings and expanded vinyl wall coverings~~
The materials indicated in Sections 803.2 through 803.13 shall ~~meet the criteria of Section 803.1.3.1 when~~ be tested as indicated in the ~~manner intended for use in accordance with the Method B protocol of NFPA 265 using the product mounting system, including adhesive.~~ corresponding sections.

~~**803.1.3.1 Acceptance criteria for NFPA 265.** The interior finish shall comply with the following:~~

1. ~~During the 40 kW exposure, flames shall not spread to the ceiling.~~
2. ~~The flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (203 by 305 mm) walls.~~
3. ~~Flashover, as defined in NFPA 265, shall not occur.~~
4. ~~The total smoke released throughout the test shall not exceed 1,000 m^2.~~

~~**803.1.4 Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E 84 or UL 723.** Textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.~~

803.5 Textile wall coverings. Where used as interior wall finish materials, textile wall coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product

mounting system, including adhesive, and shall comply with the requirements of one of the following: Section ~~803.1.2~~ 803.1.1, ~~803.1.3~~ Section 803.5.1 or ~~803.1.4~~ Section 803.5.2.

Add new text as follows:

803.5.1 Room corner test for textile wall coverings and expanded vinyl wall coverings Textile wall coverings and expanded vinyl wall coverings shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with the Method B protocol of NFPA 265 using the product mounting system, including adhesive.

803.5.1.1 Acceptance Criteria for NFPA 265 The interior finish shall comply with the following:

1. During the 40 kW exposure, flames shalln ot spread to the ceiling.
2. The flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (203 by 305 mm) walls.
3. Flashover, as defined in NFPA 265, shall not occur.
4. The total smoke release throughout the test shall not exceed 1,000 m^2.

803.5.2 Acceptance Criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E 84 or UL 723 Textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by an automatic sprinkler system installed in accordance with Section 903.1.1 or 903.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.

Revise as follows:

803.6 Textile ceiling coverings. Where used as interior ceiling finish materials, textile ceiling coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section ~~803.1.2~~ 803.1.1 or ~~803.1.4~~ of Section 803.5.2.

803.7 Expanded vinyl wall coverings. Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following: Section ~~803.1.2~~ 803.1.1, ~~803.1.3~~ Section 803.5.1 or ~~803.1.4~~ Section 803.5.2.

803.8 Expanded vinyl ceiling coverings. Where used as interior ceiling finish materials, expanded vinyl ceiling coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section ~~803.1.2~~ 803.1.1 or ~~803.1.4~~ Section 803.5.2.

803.9 High-density polyethylene (HDPE) and polypropylene (PP). Where high-density polyethylene or polypropylene is used as an interior finish it shall comply with Section ~~803.1.2~~ 803.1.1.

803.11 Interior finish requirements based on group. *Interior wall*

and ceiling finish shall have a flame spread index not greater than that specified in Table 803.11 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 ~~803.1.2.1~~ 803.1.1.1, shall be permitted to be used where a Class A classification in accordance with ASTM E 84 or UL 723 is required.

Reason: This reorganizes section 803 to make it follow the testing logic, but it does not change any of the requirements.
Any interior wall and ceiling finish material is permitted to be tested to NFPA 286 and therefore this should come first, as section 803.1.1. This needs to be followed by the criteria for NFPA 286 testing. The section also needs to say that anything that passes NFPA 286 (i.e. the corresonding criteria) is acceptable as a Class A in accordance with ASTM E84 and does not need retesting. Then comes the section on ASTM E84, with the corresponding criteria, as section 803.1.2.

The next section, 803.1.3, addresses the materials that have other requirements and cannot simply be tested to either one of the above without further details. That includes all of the materials in sections 803.2 through 803.13.

Textile wall coverings and expanded vinyl wall coverings are covered in 803.5 and 803.7. Therefore the testing in accordance with NFPA 265 needs to move to those sections and that is being done. When dealing with expanded vinyl wall coverings the criteria are not repeated but just reference the textile wall coverings section.

Textile and expanded vinyl ceiling coverings stay as is, just with the section reference changed. The same is true for HDPE and PP.

The only other change is the section reference in 803.11, again without changing requirements.

Table 803.1 does not need any changes.

In order to ensure that the proposed reorganization appears in the correct order, I attach a copy of the final text as it should read, legislative language. The text as it should read, in its final form is shown below:

Section 803, as proposed for IBC 2018, in final form

803.1 General. Interior wall and ceiling finish materials shall be classified for fire performance and smoke development in accordance with Section 803.1.1 or 803.1.2, except as shown in Sections 803.1.3 through 803.13. Materials tested in accordance with Section 803.1.1 shall not be required to be tested in accordance with Section 803.1.2.

803.1.1 Interior wall and ceiling finish materials tested in accordance with NFPA 286. Interior wall and ceiling finish materials shall be classified in accordance with NFPA 286 and comply with Section 803.1.1.1. Materials complying with Section 803.1.1.1 shall be considered also to comply with the requirements of a Class A in accordance with Section 803.1.2.

803.1.1.1 Acceptance criteria for NFPA 286. The interior finish shall comply with the following:
1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.
3. Flashover, as defined in NFPA 286, shall not occur.
4. The peak heat release rate throughout the test shall not exceed 800 kW.
5. The total smoke released throughout the test shall not exceed 1,000 m^2.

803.1.2 Interior wall and ceiling finish materials tested in accordance with ASTM E84 or UL 723. Interior wall and ceiling finish materials shall be classified in accordance with ASTM E 84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.
Class A: = Flame spread index 0-25; smoke developed index 0-450.
Class B: = Flame spread index 26-75; smoke developed index 0-450.
Class C: = Flame spread index 76-200; smoke developed index 0-450.

Exception: Materials tested in accordance with Section 803.1.1 and as indicated in Section 803.1.3 through 803.13.

803.1.3 Interior wall and ceiling finish materials with different requirements. The materials indicated in Sections 803.2 through 803.13 shall be tested as indicated in the corresponding sections.

803.2 Thickness exemption. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls or ceilings shall not be required to be tested.

803.3 Heavy timber exemption. Exposed portions of building elements complying with the requirements for buildings of Type IV construction in Section 602.4 shall not be subject to interior finish requirements.

803.4 Foam plastics. Foam plastics shall not be used as interior finish except as provided in Section 2603.9. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.

803.5 Textile wall coverings. Where used as interior wall finish materials, textile wall coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following: Section 803.1.1, Section 803.5.1 or Section 803.5.2.

803.5.1 Room corner test for textile wall coverings and expanded vinyl wall coverings. Textile wall coverings and expanded vinyl wall coverings shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with the Method B protocol of NFPA 265 using the product-mounting system, including adhesive.

8**03.5.1.1 Acceptance criteria for NFPA 265**. The interior finish shall comply with the following:
1. During the 40 kW exposure, flames shall not spread to the ceiling.
2.The flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (203 by 305 mm) walls.
3. Flashover, as defined in NFPA 265, shall not occur.
4. The total smoke released throughout the test shall not exceed 1,000 m2.

803.5.2 Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E 84 or UL 723. Textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.

803.6 Textile ceiling coverings. Where used as interior ceiling finish materials, textile ceiling coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or of Section 803.5.2.

803.7 Expanded vinyl wall coverings. Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following: Section 803.1.1, Section 803.5.1 or Section 803.5.2.

803.8 Expanded vinyl ceiling coverings. Where used as interior ceiling finish materials, expanded vinyl ceiling coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or of Section 803.5.2.

803.9 High-density polyethylene (HDPE) and polypropylene (PP). Where high-density polyethylene or polypropylene is used as an interior finish it shall comply with Section 803.1.1.

803.10 Site-fabricated stretch systems. Where used as interior wall or interior

ceiling finish materials, site-fabricated stretch systems containing all three components described in the definition in Chapter 2 shall be tested in the manner intended for use, and shall comply with the requirements of Section 803.1.1 or 803.1.2. If the materials are tested in accordance with ASTM E 84 or UL 723, specimen preparation and mounting shall be in accordance with ASTM E 2573.

803.11 Interior finish requirements based on group. Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.11 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 E 84 or UL 723 is required.

803.12 Stability. Interior finish materials regulated by this chapter shall be applied or otherwise fastened in such a manner that such materials will not readily become detached where subjected to room temperatures of 200°F (93°C) for not less than 30 minutes.

803.13 Application of interior finish materials to fire resistance-rated or noncombustible building elements.
Where interior finish materials are applied on walls, ceilings or structural elements required to have a fire-resistance rating or to be of noncombustible construction, these finish materials shall comply with the provisions of this section.

803.13.1 Direct attachment and furred construction. Where walls and ceilings are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the interior finish material shall be applied directly against such construction or to furring strips not exceeding 13/4 inches (44 mm), applied directly against such surfaces.

803.13.1.1 Furred construction. If the interior finish material is applied to furring strips, the intervening spaces between such furring strips shall comply with one of the following:
1. Be filled with material that is inorganic or noncombustible;
2. Be filled with material that meets the requirements of a Class A material in accordance with Section 803.1.1 or 803.1.2; or
3. Be fire-blocked at a maximum of 8 feet (2438 mm) in every direction in accordance with Section 718.

803.13.2 Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.13.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used.

Exceptions:
1. Where interior finish materials are protected on both sides by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Where interior finish materials are attached to noncombustible backing or furring strips installed as specified in Section 803.13.1.1.

803.13.2.1 Hangers and assembly members. The hangers and assembly members of such dropped ceilings that are below the horizontal fire-resistance-rated floor or roof assemblies shall be of noncombustible materials. The construction of each set-out wall and horizontal fire-resistance-rated floor or roof assembly shall be of fire-resistance-rated construction as required elsewhere in this code.

Exception: In Type III and V construction, fire retardant-treated wood shall be permitted for use as hangers and assembly members of dropped ceilings.

803.13.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of Type IV construction or to wood furring strips applied directly to the wood decking or planking shall be fire-blocked as specified in Section 803.13.1.1.

803.13.4 Materials. An interior wall or ceiling finish material that is not more than 1/4 inch (6.4 mm) thick shall be applied directly onto the wall, ceiling or structural element without the use of furring strips and shall not be suspended away from the building element to which that finish material it is applied.

Exceptions:

1. Noncombustible interior finish materials.
2. Materials that meet the requirements of Class A materials in accordance with Section 803.1.1 or 803.1.2 where the qualifying tests were made with the material furred out from the noncombustible backing shall be permitted to be used with furring strips.
3. Materials that meet the requirements of Class A materials in accordance with Section 803.1.1 or 803.1.2 where the qualifying tests were made with the material suspended away from the noncombustible backing shall be permitted to be used suspended away from the building element.

Cost Impact: Will not increase the cost of construction
This is simply a reorganization without changing requirements.

FS139-15 : 803.1-HIRSCHLER3573

Public Hearing Results

Committee Action: Approved as Submitted

Committee Reason: The committee approved this change based on the following: moving NFPA 286 to the beginning of the section is editorial, is appropriate for more product and removes redundant language; ASTM E84 remains an option for materials to meet; and the section as a whole becomes more enforceable as it is more easily understood.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Kuma Sumathipala, representing American Wood Council (ksumathipala@awc.org); Jason Smart, representing American Wood Council (jsmart@awc.org); Paul Coats, PE CBO, representing American Wood Council (pcoats@awc.org); Sam Francis, representing American Wood Council (sfrancis@awc.org); David Tyree, representing American Wood Council (dtyree@awc.org) requests Disapprove.

Commenter's Reason: The code development committee approved FS 139-15 because "*moving NFPA 286 to the beginning of this section is editorial, is appropriate for more product and removes redundant language; ASTM E84 remains an option for materials to meet, and the section as a whole becomes more enforceable as it is more easily understood.*"
As currently written in the International Building Code, the International Residential Code, the International Fire Code, and the International Existing Building Code, the regulatory test for interior finish is ASTM E84. NFPA 286 is allowed as an option. This proposal changes that for the IBC, creating an inconsistency between the sets of International codes. Additionally, the vast majority of commercially available interior finish have been tested to ASTM E84, not NFPA 286 and, as such, it is important maintain ASTM E84 as the primary test method while allowing NFPA 286 as an alternate. This proposal reverses that for no valid technical reason. To evaluate performance, NFPA 286 requires the test specimen to be applied to walls and ceiling of a test room even if the test material is not intended as interior finish for both

walls and ceilings. Accordingly, NFPA 286 is best suited for evaluating a narrow class of materials that are intended to be applied on walls as well as ceilings. Therefore it is inappropriate to make NFPA 286 the primary test for assessing all interior finish materials.

FS139-15

FS142-15
909.20.1

Proposed Change as Submitted

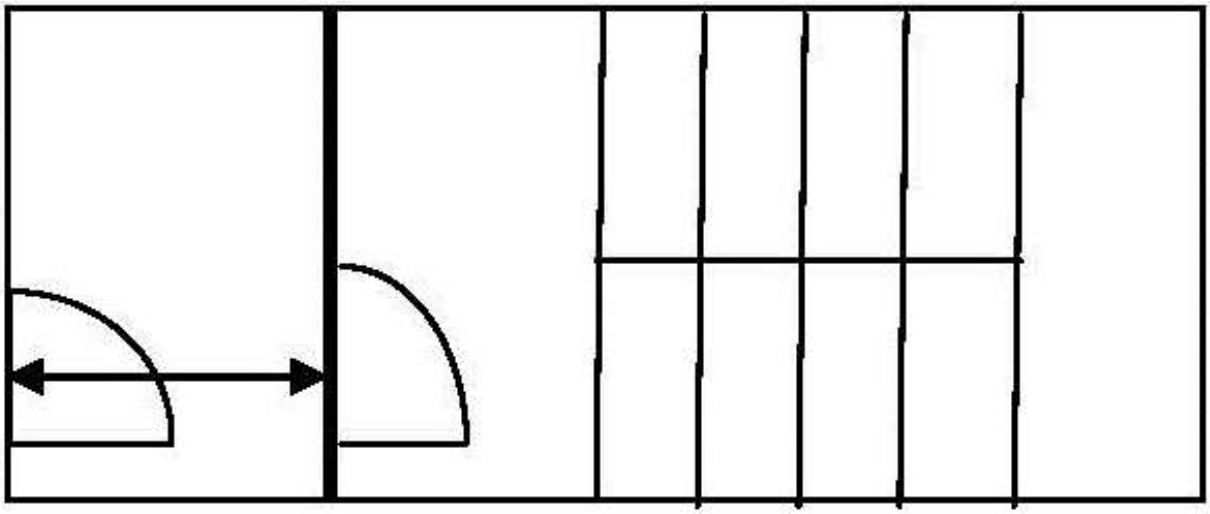
Proponent : Ali Fattah, City of San Diego Development Services Department, representing City of San Diego (afattah@sandiego.gov)

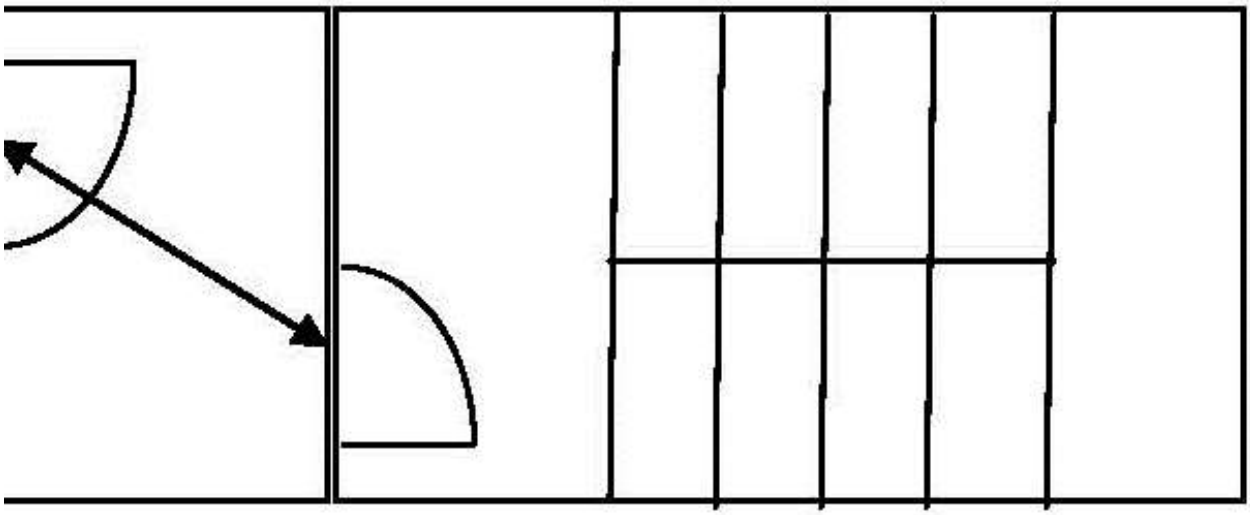
2015 International Building Code

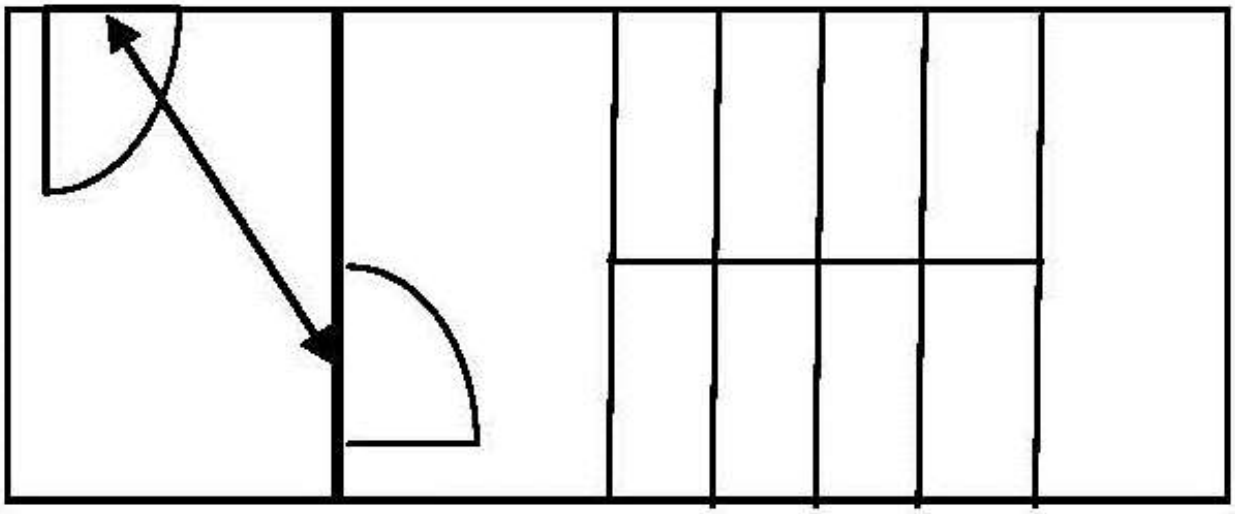
Revise as follows:

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: 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 incudes 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.
Please see the atached figures that address possible configurations of vestibules that are addressed by this code change.







Cost Impact: Will not increase the cost of construction

This code change may reduce the size of vestibules thereby increasing useable floor area.

FS142-15 : 909.20.1-FATTAH5006

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on the following: the proposal does not seem to fix anything; the measurement on the vestibule length is confusing and should possibly require measurement from the face of the doors rather than the centerline; this might be better handled in the commentary with figures.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Ali Fattah, City of San Diego Development Services, representing City of San Diego (afattah@sandiego.gov) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

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~~ . The distance between the centerline of the ~~doorways into~~ doorway entering the vestibule and the centerline of the doorway entering the stairway shall not be less than 72 inches (1829 mm) when measured between the face of each doorway on the vestibule ~~and stairway~~ side.

Commenter's Reason: The public comment is submitted to address feedback provided by opponents and the committee at the committee action hearing. Not all issues were addressed since some did not appear to be applicable.
The intent of the IBC is to ensure adequate space for fire fighting staging in smokeproof enclosure vestibules and to prevent smoke from entering the stairway portion of the enclosure. The vestibule serves as a buffer between the building and the stairway and as a result the proposed code change seeks to prohibit a configuration where both the vestibule door and the stairway door can be opened at the same time. Additionally the code intends for the doors to be separated to allow fire fighters to stage in the vestibule and continue moving forward as opposed to Figure B where they have to turn right, close the vestibule door, hook up to the standpipe in te vestibule and then enter the floor out of the vestibule.

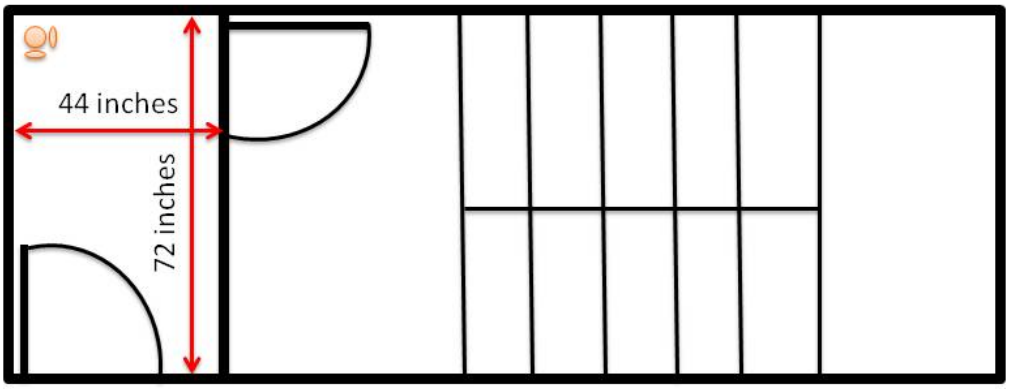
The text of the section is being rearranged to separate the minimum clear width from the second concept which is the separation between the doors. Reference to door face was added in response to feedback from opponents.

One comment raised by oponents was that the proposed code change would violate accessibilty requirements for vestibules with doors in series in chapter 11. After

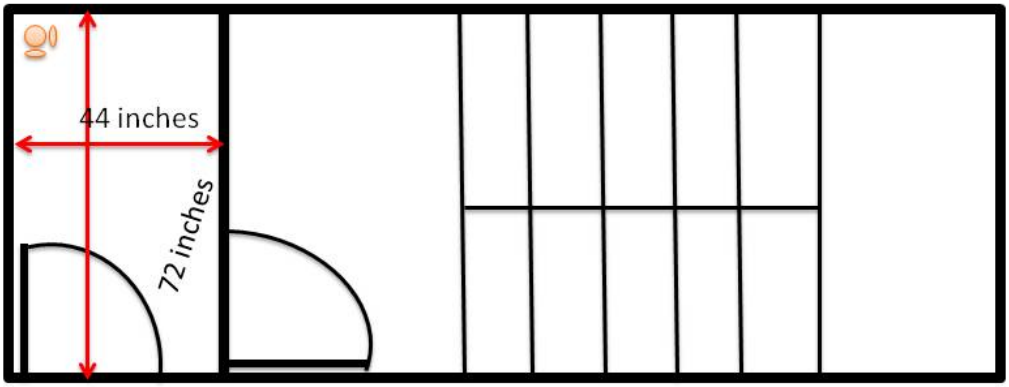
reviewing the IBC and ANSI A117.1 Chapter 4 it appears accessible route implies wheelchair access to something and unless there is a refuge area in a stairway an accessible rout is not required. Figure C to Section 402.5 requires the door width plus 48 inches which exceeds 72 inches, and as a result it is not apparent that the 72 inch dimension intended by the IBC or legacy codes in editions that preceded accessible means of egress intended for the vestibule to be accessible. This issues is not addressed in the code change.

Additional improved figures have been added to improve clarity of the intrended code change that inendss to add a clarification and not a change in requirements.

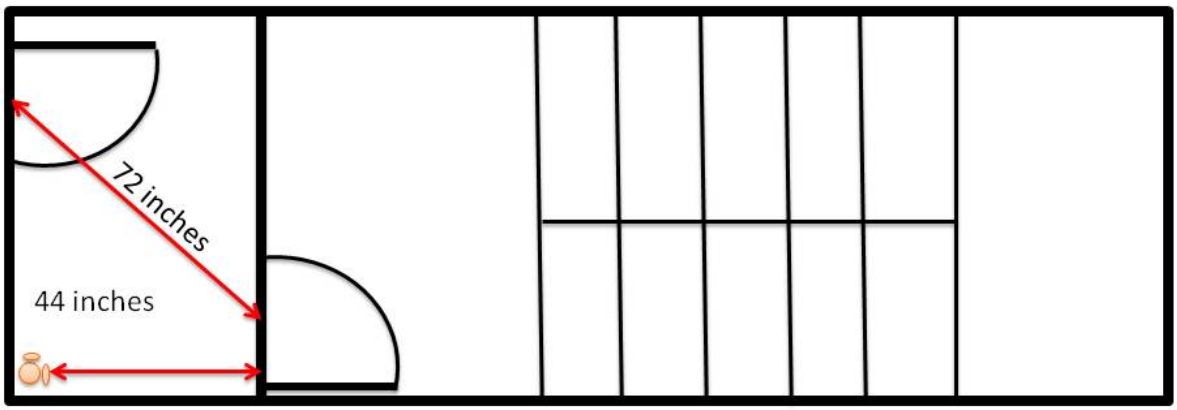
FS 142-15 Figure A
2015 IBC Code Complying



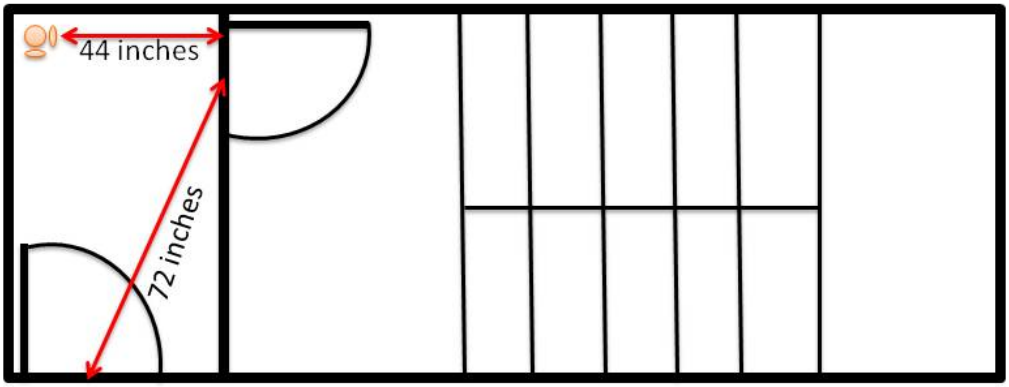
FS 142-15 Figure B
2015 IBC Code Complying



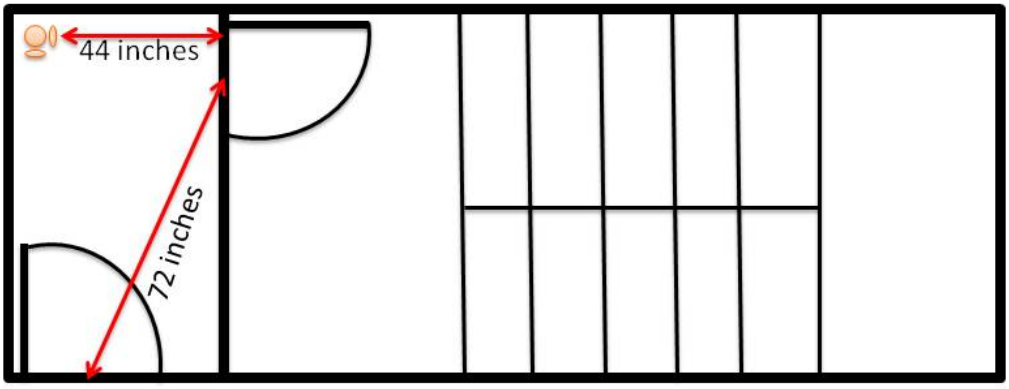
FS 142-15 Figure C
Proposed Code Change

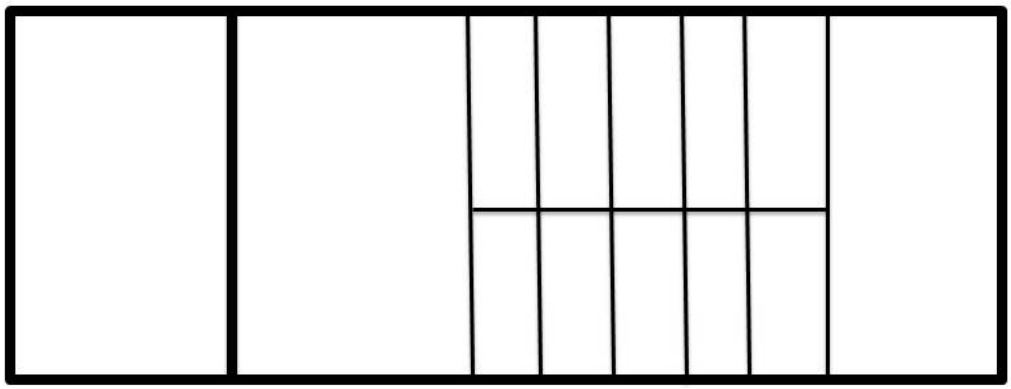


FS 142-15 Figure D
Proposed Code Change

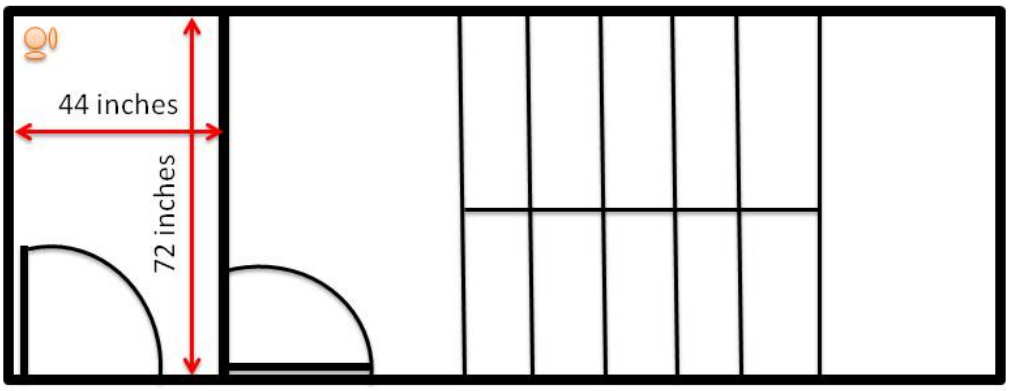


FS 142-15 Figure E
Proposed Code Change





FS 142-15 Figure B
2015 IBC Code Complying



FS147-15
1403.5

Proposed Change as Submitted

Proponent : Marcelo Hirschler, representing GBH International (gbhint@aol.com)

2015 International Building Code

Revise as follows:

1403.5 Vertical and lateral flame propagation. 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. For the purposes of this section, fenestration products and flashing of fenestration products 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 1405.2.
2. Walls in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* complies with the following: (a) It has a peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM ~~E 1354 and has a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723~~ E1354. The ASTM ~~E 1354~~ E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2. (b) It has 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, when tested using Type X gypsum board as the substrate.

Reason: Exception 2 was added during the cycle leading to IBC 2015. There has been a lot of concern that insufficient clarification exists as to how to test the water-resistive barriers with ASTM E84, since the substrate used will affect the test results, particularly for this materials. The proposed clarification should make it clear that Type X gypsum board should be used as the substrate.

Cost Impact: Will not increase the cost of construction
This is clarification regarding the testing protocol and will not change the materials involved.

FS147-15 : 1403.5-HIRSCHLER4297

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that additional justification was required to justify the proposed substrate material of Type X gypsum board.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Marcelo Hirschler, representing GBH International (gbhint@aol.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

1403.5 Vertical and lateral flame propagation. 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. For the purposes of this section, fenestration products and flashing of fenestration products 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 1405.2.
2. Walls in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* complies with the following: (a) It has a peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2. (b) It has 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, ~~when tested using Type X gypsum board as the substrate~~ <u>with test specimen preparation and mounting in accordance with ASTM E2404</u>.

Commenter's Reason: During the initial code hearings committee ASTM E05 had not yet issued an appropriate specimen preparation and mounting method for water resistive barriers contained within exterior assemblies, although there was consensus that they should not be tested over a non-combustible substrate.

Since the code hearings for committee proposals, consensus has been reached at ASTM and a new edition of ASTM E2404 has been issued. This new edition (2015a) has an amended title and scope and addresses specimen preparation and mounting specific for this application. This standard will be updated to the newest edition (2015a or newer) by the administrative committee in the Group B cycle.

It is essential that the 2015a edition of the ASTM E2404 standard (which has been issued) be the one that applies in this section. ASTM E2404 is already referenced in the IBC.

The new title of the 2015a edition is: Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics. The new scope includes the following information:
The new scope states that the practice describes procedures for specimen preparation and mounting when testing textile, paper, vinyl, expanded vinyl or other polymeric wall or ceiling covering materials to assess flame spread and smoke development as surface burning characteristics using ASTM E84. It states further that the practice applies also to facings or wood veneers intended to be applied on site over a wood substrate (in 8.7) and to water-resistive barriers that are used as a component of exterior wall systems, as part of the exterior envelope (in 8.9). The scope also states that the practice does not apply to: (a) laminated products factory produced with a wood substrate (which are covered by ASTM E2579), (b) to water-resistive barriers comprised of foam plastic materials contained within the wall system or (c) to water vapor retarders used, in conjunction with thermal insulation, on the interior or exterior side of an exterior wall. Other sections of the new scope deal with administrative issues.

The new section dealing with the materials relevant to this code proposal address how to test water-resistive barriers. The section (8.9) explains that for water-resistive barriers, the test specimen preparation method to be used must be a function of the substrate over which the water-resistive barrier is intended to be applied. It goes on to state that the test specimen preparation method to be used is the relevant one among those described in sections 8.2 through 8.5, corresponding to the substrate (noncombustible material, gypsum board, wood or other combustible material) over which the water-resistive barrier is intended to be applied. With regard to the IBC and section 1403.5, the relevant section is 8.3.

Section 8.3 of ASTM E2404 (2015a) states that the test specimen is to be mounted on a 5⁄8 in. (15.9 mm) thick Type X gypsum board, complying with Specification C1396/C1396M. It states further that the gypsum board is not required to be mounted on studs.

FS147-15

FS149-15 Part I

1403.5, 1407.10.4, 1409.10.4

Proposed Change as Submitted

Proponent : John Woestman, Kellen Company, representing Extruded Polystyrene Foam Association (XPSA) (jwoestman@kellencompany.com)

2015 International Building Code

Revise as follows:

1403.5 Vertical and lateral flame propagation. 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. For the purposes of this section, fenestration products and flashing of fenestration products shall not be considered part of the *water-resistive barrier*. The required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an approved source.
2. NFPA 285 fire performance designs certified by an approved agency.
3. Engineering analysis of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285.

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 1405.2.

2.Walls in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* has a peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E 1354 and has a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723. The ASTM E 1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.

1407.10.4 Full-scale tests. The MCM system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use. The required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be

established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an approved source.
2. NFPA 285 fire performance designs certified by an approved agency.
3. Engineering analysis of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285.

1409.10.4 Full-scale tests. The HPL system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the HPL system with the HPL in the minimum and maximum thicknesses intended for use. The required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an approved source.
2. NFPA 285 fire performance designs certified by an approved agency.
3. Engineering analysis of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285.

Reason: This code change specifies the documentation requirements for NFPA 285 fire performance designs. In a similar manner as Section 703.3, the proposed wording will allow NFPA 285 tests to be documented in an approved source, listed by an approved agency, or engineering judgments and other performance designs to be used in lieu of an actual NFPA 285 test on the specific assembly. This will recognize existing NPFA 285 test reports and third-party listings as well as permit the addition or substitution of materials within an NFPA 285 complying assemblies provided sufficient analytical data (i.e. engineering analysis) is made available to the code official. The code change reflects current practice in the market. This code change proposal delineates sources available for compliance documentation for a wide variety of NFPA 285 tested assemblies.

Cost Impact: Will not increase the cost of construction
No cost increase. This proposal identifies options to comply with existing NFPA 285 testing requirements.

FS149-15 Part I : 1403.5-WOESTMAN5561

Public Hearing Results

Part I

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: Section 104.11 allows this already; testing should be done to support suitability of the exterior wall system; and there are unqualified labs currently providing engineering analyses to determine equivalence – this change would support that.

Individual Consideration Agenda

Public Comment 1:

Proponent : John Woestman, Kellen, representing Extruded Polystyrene Foam Association (XPSA) (jwoestman@kellencompany.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

1403.5 Vertical and lateral flame propagation. 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. For the purposes of this section, fenestration products and flashing of fenestration products shall not be considered part of the *water-resistive barrier*. ~~The~~ Subject to the approval of the building code official, the required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an *approved* ~~*source*~~*source*.
2. NFPA 285 fire performance designs certified by an *approved* ~~*agency*~~*agency*.
3. ~~Engineering~~ An *approved* engineering analysis ~~of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285~~.

Exceptions:

3.1. 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 1405.2.

3.2. Walls in which the *water-resistive barrier* is the only combustible component and the *water-resistive barrier* has a peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E 1354 and has a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723. The ASTM E 1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of

50 kW/m^2.

1407.10.4 Full-scale tests. The MCM system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use. ~~The~~ Subject to the approval of the building official, the required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an *approved source*.
2. NFPA 285 fire performance designs certified by an *approved agency*.
3. ~~Engineering~~ An *approved* engineering analysis~~ of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285~~.

1409.10.4 Full-scale tests. The HPL system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the HPL system with the HPL in the minimum and maximum thicknesses intended for use. ~~The~~ Subject to the approval of the building official, the required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an *approved* ~~*source*~~*source*.
2. NFPA 285 fire performance designs certified by an *approved* ~~*agency*~~*agency*.
3. ~~Engineering~~ An *approved* engineering analysis~~ of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285~~.

Commenter's Reason: Addressing the committee concerns, we've revised the proposed language to make it clear the verification of meeting the NFPA 285 requirements is from an *approved* source, *approved* agency, or *approved* engineering analysis, and subject to the approval of the building official.
This code change specifies the documentation requirements for NFPA 285 fire performance designs. In a similar manner as Section 703.3, the proposed wording will allow NFPA 285 tests to be documented in an *approved source*, listed by an *approved agency*, or *approved* engineering judgments and other performance designs as acceptable to the building official to be used in lieu of an actual NFPA 285 test on the specific assembly.

FS149-15 Part I

FS149-15 Part II

2603.5.5

Proposed Change as Submitted

Proponent : John Woestman, Kellen Company, representing Extruded Polystyrene Foam Association (XPSA) (jwoestman@kellencompany.com)

2015 International Building Code

Revise as follows:

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. The required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an approved source.
2. NFPA 285 fire performance designs certified by an approved agency.
3. Engineering analysis of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285.

Exceptions:

1. One-story buildings complying with Section 2603.4.1.4.
2. 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 E 84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).

Reason: This code change specifies the documentation requirements for NFPA 285 fire performance designs. In a similar manner as Section 703.3, the proposed wording will allow NFPA 285 tests to be documented in an approved source, listed by an approved agency, or engineering judgments and other performance designs to be used in lieu of an actual NFPA 285 test on the specific assembly. This will recognize existing NPFA 285 test reports and third-party listings as well as permit the addition or substitution of materials within an NFPA 285 complying assemblies provided sufficient analytical data (i.e. engineering analysis) is made available to the code official. The code change reflects current practice in the market. This code change proposal delineates sources available for compliance documentation for a wide variety of NFPA 285 tested assemblies.

Cost Impact: Will not increase the cost of construction

No cost increase. This proposal identifies options to comply with existing NFPA 285 testing requirements.

FS149-15 Part II : 2603.5.5-WOESTMAN5562

Public Hearing Results

Part II

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: Section 104.11 allows this already; testing should be done to support suitability of the exterior wall system; and there are unqualified labs currently providing engineering analyses to determine equivalence – this change would support that.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : John Woestman, representing Extruded Polystyrene Foam Association (XPSA) (jwoestman@kellencompany.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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. ~~The~~ Subject to the approval of the building official, the required NFPA 285 fire performance of the exterior wall assembly shall be permitted to be established by any of the following methods or procedures:

1. NFPA 285 fire performance designs documented in an *approved* ~~*source*~~*source*.
2. NFPA 285 fire performance designs certified by an *approved* ~~*agency*~~*agency*.
3. ~~Engineering~~ An *approved* engineering analysis~~ of an exterior wall assembly based on a comparison of building element, component or assemblies designs that are equivalent to the fire exposure and acceptance criteria set forth in NFPA 285~~.

Exceptions:

3.1. One-story buildings complying with Section 2603.4.1.4.

3.2. 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:

3.2.1. There is no airspace between the insulation and the concrete or masonry.

3.2.2. The insulation has a flame spread index of not more than 25 as determined in accordance with ASTM E 84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).

Commenter's Reason: Addressing the committee concerns, we've revised the proposed language to make it clear the verification of meeting the NFPA 285 requirements is from an *approved* source, *approved* agency, or *approved* engineering analysis, and subject to the approval of the building official.
This code change specifies the documentation requirements for NFPA 285 fire performance designs. In a similar manner as Section 703.3, the proposed wording will allow NFPA 285 tests to be documented in an *approved source*, listed by an *approved agency*, or *approved* engineering judgments and other performance designs as acceptable to the building official to be used in lieu of an actual NFPA 285 test on the specific assembly.

FS149-15 Part II

FS150-15
1404.2

Proposed Change as Submitted

Proponent : Jay Crandell, ARES Consulting, representing Foam Sheathing Committee of the American Chemistry Council

2015 International Building Code

Revise as follows:

1404.2 Water-resistive barrier. *Water-resistive barrier* material assemblies shall be installed in accordance with the manufacturer's installation instructions using and *approved* installation method tested for water penetration resistance in accordance with one of the following:

1. The *water-resistive barrier* assembly shall be tested as a component of a complete exterior wall envelope system in accordance with Section 1403.2, Exception 2; or
2. The *water-resistive barrier* assembly shall be tested in accordance with Section 1403.2, Exception 2, without exterior wall finish materials using a minimum differential pressure of 2.86 pounds per square foot (psf)(0.136 kN/m^2) and a minimum test exposure duration of 15 minutes.

Exception: Not fewer than one layer of No.15 asphalt felt, complying with ASTM D 226 for Type 1 felt ~~or other *approved* materials,~~ shall be attached to the studs or sheathing, with flashing as described in Section 1405.4, in such a manner as to provide a continuous *water-resistive barrier* behind the *exterior wall* veneer.

Reason: The proposal specifies that water-resistive barriers be installed in accordance with the manufacturer's installation instructions to assist in proper use and enforcement. It also coordinates and unifies WRB assembly water penetration testing requirements. Furthermore, an exception statement continues to prescriptively recognize ASTM D226 Type 1 asphalt felt as a deemed-to-comply solution (i.e., assembly water resistance testing not required).
The concept of this proposal is to use the same test method (ASTM E 331) and adjust test conditions for two optional qualification approaches to account for the presence or absence of an exterior wall finish material over the water-resistive barrier. It is important to be able to test these two ways to appropriate qualify WRB asemblies (1) for use with a specific exterior wall envelope system (including a specific cladding material) or (2) to more generally qualify a WRB assembly for use with multiple exterior wall finish materials by testing the WRB assembly in an unprotected or exposed condition.

The water penetration resistance test criteria proposed for the second condition, where the WRB assembly is unprotected, is consistent with criteria specified in ASTM E 331 (e.g., 2.86 psf and 15 minute duration with no water penetration). This requirement is also consistent with that used in another code referenced standard for water-resistive barrier coatings that are tested in an unprotected condition (refer to Section 1408.4.1.1) for use with EIFS. Thus, the proposal is consistent with two-code referenced standards. It is also reasonably consistent with the performance of asphalt felt when tested in an unprotected condition and, therefore, complies with the equivalency intent of the code as based on testing by three different certified laboratories where performance of 5 to 15 minutes at 2.86 psf was observed for

asphalt felt using ASTM E 331.

The need for a uniform and effective water-penetration resistance requirement is documented in the literature (Hall and Hoigard, 2005; Dorin, 2006; Lstiburek, 2012). In particular, Hall and Hoigard (2005) evaluated current code requirements, acceptance criteria, and field experience. They also report comparative test data under installed water exposure conditions, demonstrating that at least some polymeric building wrap materials are capable of performing equivalenty to asphalt-saturated felt materials. The relevant conclusions from the study include:

1. "Current builing code provisions offer no rational means of assessing the equivalency of alternative WRB products to ASTM D-226 type I asphalt-saturated felt..."

2. "The [material only water resistance tests] fail to address several important moisture transport mechanisms that affect the in-service performance of WRBs."

The proposed requirements are consistent with the intent of equivalency between code-recognized materials and methods (e.g., asphalt felt) and other alternative WRB materials and assemblies. Therefore, this proposal will help to ensure acceptable and consistent perormance of various types of alternative WRB materials and assemblies in a non-exclusionary and effective manner.

Bibliography: Dorin, L. (2005). The importance of integrating flashing and the water resistive barrier in the exterior wall systems of residential buildings. *Journal of the ASTM International*, Vol. 3, No. 5, ASTM International, West Conshohocken, PA
Hall, G.D. and Hoigard, K.R., "Water-Resistive Barriers: How do they compare?", *Interface*, November 2005.

Lstiburek, J., "Leaks & Holes", *ASHRAE Journal*, December 2012.

Cost Impact: Will not increase the cost of construction
This code change proposal has no cost impact because it does not change the requirement for any code-recognized water resistive barrier, such as asphalt felt. For WRB materials and assemblies that are not code recognized, but which are tested for assembly water-penetration resistance meeting the performance intent of the code and equivalency to code-recognized materials, there also are no cost impacts because there is no change in requirements. Thus, a variety of code-compliant options are maintained and potential long-term cost impacts to construction of non-compliant materials will be reduced or avoided.

FS150-15 : 1404.2-CRANDELL4987

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: the proposed testing does not address durability and effectiveness representing installed conditions; it appears the code official would need to approve the installation method; there should be a definition for the water-resistive barrier assembly.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Jay Crandell, ARES Consulting, representing self requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1404.2 Water-resistive barrier. Not fewer than one layer of No.15 asphalt felt, complying with ASTM D 226 for Type 1 felt or other *approved* materials, shall be attached to the studs or sheathing, with flashing as described in Section 1405.4, in such a manner as to provide a continuous *water-resistive barrier* behind the *exterior wall* veneer. Other approved water-resistive barrier materials shall be installed in accordance with the manufacturer's installation instructions. The installation method shall have water penetration resistance at least equivalent to accepted practice for installation of No. 15 asphalt felt.

Commenter's Reason: This PC simplifies the original proposal to address two major concerns: (1) consistency of installed water penetration resistance performance for all "other approved materials" and (2) minimum performance at least equivalent to that of No. 15 asphalt felt (a code recognized and successful practice). The reason statement with the original proposal provided justification for this proposal in relation to the above concerns. The justification is further supplemented with a review of data from various test standards, approved agencies, and the technical literature (see ABTG Research Report No. 1504-3 "Water-Resistive Barriers: Assuring Consistent Assembly Water Penetration Resistance" available at http://www.appliedbuildingtech.com/research-reports). This PC also references manufacturer installation instructions which are important to proper installation.

The clear need for a consistently-applied water penetration test requirement for installation methods of "other approved materials" (materials other than code-recognized No.15 felt and Grade D paper) was not the basis for disapproval at the first hearing. Instead, the committee offered comments to help improve this proposal. This public comment addresses the committee's three concerns as follows:

1. "*Proposal testing does not address durability*" –The proposal only addresses the goal of having consistency with regard to ensuring installed water penetration resistance at least equivalent to code-recognized materials and methods (e.g., No. 15 asphalt felt). The PC is written to help clarify that the proposal does not change the durability requirements currently applicable to all "other approved materials" or those presently in the code such as No.15 felt and Grade D paper. It in no way alters or excludes existing durability requirements that are currently being applied in various standards and evaluation criteria for various WRB materials. Unlike water penetration assembly testing, durability testing cannot be so uniformly specified and this is recognized in the ASTM E1677 standard for air-barriers which also are used as water-resistive barriers: "*X2.6 An AB should be sufficiently durable to maintain its effectiveness for a period at least equal to the expected service life of the structure.* ***There is not one test that can provide this information****...*" (ASTM E1677-05)
2. "*It appears the code official would need to approve the installation method*" – There was a comment that the wording "approved installation method" would force building officials to review every installation method. This language has been removed and replaced with language simply stating the requirements to ensure water penetration resistance equivalency of other approved materials as installed. All "other approved materials" are currently required to be "approved" by definition. This PC will ensure that such approvals will be based on information that is consistently applied for all other approved materials in

regard to water penetration resistance at a level that is equivalent to code recognize materials such as No.15 asphalt felt. This will place no additional burden on code officials because this information would be placed in test reports or evaluation reports that are currently required to support approval of other approved materials. For some materials, this information is already included in code evaluation data. Consequently, this proposal will assist the code official in performing this duty by ensuring that all materials are evaluated on a consistent and equivalent basis with performance at least equal to that of No.15 asphalt felt. For code-recognized materials, like asphalt felt and Grade D paper, where installation requirements are specified in the code, the code official does not have to approve the material or installation method.

3. "*There should be a definition for water-resistive barrier assembly*" – The term "water-resistive barrier assembly" has been removed in the PC, relying instead on terms already existing in the code and in familiar usage.

While most other approved materials are evaluated similarly for installed water penetration resistance, some materials have no requirement for confirmation of equivalent performance of installed water penetration resistance. For example, ASTM E2556 includes coverage of various types of building wraps which are "other approved materials" and which have a variety of differences in material formulation or use of perforations to provide a combination of water resistance and vapor permeance. As shown in the literature, differences in the performance of these materials and equivalency to code recognized materials can only be discerned when testing as an installed assembly. But, unlike requirements for essentially all other WRB materials, the E2556 standard and current acceptance criteria for building wraps lack any requirement for installed performance which is a critical factor. The ASTM E2556 standard states in its scope: "1.2 This specification is limited to evaluation of materials and does not address installed performance..."

Finally, the concept of "other approved materials" is maintained (existing code language), clarified, and strengthened with provisions to assure that all other approved materials must perform equivalently in regard to installed water penetration resistance (consistent with the intent of the code)

Public Comment 2:

Proponent : Jay Crandell, ARES Consulting, representing Foam Sheathing Committee requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1404.2 Water-resistive barrier. Not fewer than one layer of No.15 asphalt felt, complying with ASTM D 226 for Type 1 felt or other *approved* materials, shall be attached to the studs or sheathing, with flashing as described in Section 1405.4, in such a manner as to provide a continuous *water-resistive barrier* behind the *exterior wall* veneer. Other approved water-resistive barrier materials shall be installed in accordance with the manufacturer's installation instructions. The installation method shall have water penetration resistance at least equivalent to accepted practice for installation of No. 15 asphalt felt. Alternatively, the water resistive barrier installation method shall be permitted to be tested for equivalent water penetration resistance in accordance with one of the following:

1. The water-resistive barrier shall be installed behind a specific exterior wall covering and tested in accordance with Section 1403.2, Exception 2; or
2. The water-resistive barrier shall be installed in an exposed condition without an exterior wall covering or other exterior wall components and tested in accordance with ASTM E331.

Commenter's Reason: This PC addresses two major concerns: (1) consistency of installed water penetration resistance performance for all "other approved materials" and (2) minimum performance at least equivalent to that of No. 15 asphalt felt (a code recognized and successful practice). The reason statement with the original proposal provided justification for this proposal in relation to the above concerns. The justification is further supplemented with a review of data from various test standards, approved agencies, and the technical literature (see ABTG Research Report No. 1504-3 "Water-Resistive Barriers: Assuring Consistent Assembly Water Penetration Resistance" available at http://www.appliedbuildingtech.com/research-reports). In addition, manufacturer installation instructions are referenced which are important to proper installation.

This PC differs in one important way from a separate PC submitted by this proponent on FS 150. It includes two alternative testing methods to ensure consistency in achieving equivalency to No.15 asphalt felt. It first references existing provisions in Section 1403.2 which apply to full wall asemblies which includes wall coverings. Second, it references the ASTM E331 standard which contains appropriate direction for the purpose of qualifying WRB in an exposed testing condition (indepently from any specific wall covering material). Having these two methods specifically referenced will provide flexibility to manufacturers and avoid the case of having to benchmark test against No.15 asphalt felt for every new or existing "other approved material" or test for every possible combination of cladding and WRB material (which is unreasonable). The ASTM E331 test criteria are also consistent with a number of WRB standards and also with existing benchmark test data of No.15 asphalt felt in an exposed condition (see linked research report above). Thus, this PC may be considered as an improvement over the separately submitted PC.

Please refer to the proponent's separate PC on FS 150 for additional rationale and response to committee comments.

FS150-15

FS153-15
1404.2

Proposed Change as Submitted

Proponent : Theresa Weston, DuPont Building Innovations, representing DuPont Building Innovatons (theresa.a.weston@usa.dupont.com)

2015 International Building Code

Revise as follows:

1404.2 Water-resistive barrier. Not fewer than one layer of ~~No.15 asphalt felt~~ water-resistive barrier, complying with ASTM ~~D 226 for Type 1 felt~~ E 2556 or other *approved* materials, shall be attached to the studs or sheathing, with flashing as described in Section 1405.4, in such a manner as to provide a continuous *water-resistive barrier* behind the *exterior wall* veneer.

Reason: The proposal updates the water-resistive barrier reference to the most recent consensus standard. ASTM E2556 includes housewrap materials, building papers and felt, instead of just felt and therefore is more representative of the state of the industry. Furthermore, the current reference standard is scoped for roof systems, while ASTM E2556 was developed and is scoped for wall systems and so, therefore, is more appropriate for this section of the code. ASTM E2556 is currently referenced in Section 2510 for Stucco water-resistive barriers so its adoption in this section would increase consistency within the code. ASTM E2556 is consistent with the current ICC-ES acceptance criteria for water-resistive barriers (AC-38) and therefore should not limit the use of current WRBs.

Cost Impact: Will not increase the cost of construction
The requirements in the referenced standard are consistent with requirements in ICC-ES Acceptance Criteria AC-38, the most broadly used water-resistive barrier qualification criteria, so will not change the water-resistive barriers requirements or costs associated with them.

FS153-15 : 1404.2-WESTON5376

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee did not see the need to add reference to ASTM E2556 as section 104.11 allows the code official to approve alternatives. With the limitations of this standard the code official should review and specially approve based on a given application.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Theresa Weston, DuPont Building Innovations,

representing DuPont Building Innovations (theresa.a.weston@usa.dupont.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

1404.2 Water-resistive barrier. Not fewer than one layer of one of the following materials:

1. No. 15 asphalt felt complying with ASTM D226 for Type 1 felt,
2. Grade D building paper or other water-resistive barrier, complying with ASTM E 2556 , or
3. other *approved*~~materials,~~ material.

Water-resistive barriers shall be attached to the studs or sheathing, with flashing as described in Section 1405.4, in such a manner as to provide a continuous *water-resistive barrier* behind the *exterior wall* veneer.

Commenter's Reason: The original proposal intended to update the water-resistive barrier reference to the most recent consensus standard. ASTM E2556 includes housewrap materials, building papers and felt, instead of just felt and therefore is more representative of the state of the industry. After discussions with other industry members, it was clear that continued direct reference to traditional materials was desirable. Therefore, this public comment maintains the traditional material references, while providing the updated consensus standard reference. Although the committee did not see the need to add the reference, E2556 is currently referenced in Section 2510 for Stucco water-resistive barriers so its adoption in this section would increase consistency within the code. Section 2510.6 references water-resistive barriers complying with E2556 and directs those water-resistive barriers to be installed as required in this section (1404.2). Consistency in the references between the two sections will provide clarity.

ASTM E2556 is consistent with the current ICC-ES acceptance criteria for water-resistive barriers (AC-38) and therefore should not limit the use of current WRBs. So the addition would not change current industry practice in the acceptance of water-resistive barriers.

FS153-15

FS154-15

202 (New), , 1402.1, 1404.3 (New), 1405.5 (New)

Proposed Change as Submitted

Proponent : Laverne Dalgleish, Building Professionals, representing Air Barrier Association of America

2015 International Building Code

Add new definition as follows:

SECTION 202 DEFINITIONS

AIR BARRIER. Materials assembled and joined together to provide a barrier to air leakage through the buildling envelope. An air barrier may be a single material or a combination of materials.

SECTION 202 DEFINITIONS

CONTINUOUS AIR BARRIER. A combination of materials and assemblies that restrict or prevent the passage of air thorugh the building thermal envelope.

Revise as follows:

1402.1 Definitions. The following terms are defined in Chapter 2:

ADHERED MASONRY VENEER.
AIR BARRIER.
ANCHORED MASONRY VENEER.
BACKING.
CONTINUOUS AIR BARRIER.
EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS).
EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE.
EXTERIOR WALL.
EXTERIOR WALL COVERING.
EXTERIOR WALL ENVELOPE.
FENESTRATION.
FIBER-CEMENT SIDING.
HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATE (HPL).
HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATE (HPL) SYSTEM.
METAL COMPOSITE MATERIAL (MCM).
METAL COMPOSITE MATERIAL (MCM) SYSTEM.
POLYPROPYLENE SIDING.
PORCELAIN TILE.
VENEER.
VINYL SIDING.
WATER-RESISTIVE BARRIER.

Add new text as follows:

1404.3 Air barriers. Air barrier materials shall comply with Section

C402.5.1.2.1 of the *International Energy Conservation Code*. Air barrier assemblies shall comply with Section C402.5.1.2.2 of the *International Energy Conservation Code*.

1405.5 Air barrier installation. A continuous air barrier shall be provided in accordance with Section C402.5.1.1 of the *International Energy Conservation Code*.

Reason: To clarify the need for air-barriers in the construction of building envelope assemblies and coordinate with energy code provisions for air-barriers.
Air barriers should not just be a requirement for energy code compliance from the standpoint of controlling overall building air leakage. Air barriers also play an important role in controlling leakage of warm, moist air into building cavities where it can increase the risk of condensation on cold surfaces within a building envelope assembly. In this requard, air barriers should be considered to be at least as important as vapor retarders as addressed in current Section 1405.3 of the IBC. Thus, it is important to include a reference to air barriers in the IBC to recognize that air barriers are not just an energy code concern and are important to durable construction in the IBC. With the above purpose in mind, this proposal simply coordinates the IBC wall construction requirements with air-barrier requirments already found in the IECC (without any technical change). The definitions are directly from the IECC.

Bibliography: IECC 2015 Published May 30, 2014 Page 325
IECC 2015 Published May 30, 2014 Page 326

Cost Impact: Will increase the cost of construction
If a state has adopted the IECC 2012 or ASHRAE 90.1 2010, then there is no increase cost of construction. If a state has not adopted IECC 2012 or ASHRAE 90.1 2010, then adding a requirment for air barrier will increase the cost of construction by aproximately $4.00 per square foot of area. This cost is offset by reducing both building maintainance and building repair by an even greater amount over the life of the building.

FS154-15 : 1402.1-DALGLEISH5452

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: Having air barrier requirements in the IBC is inappropriate and they should remain in the IECC; Providing only pointers to the IECC is redundant as the code already sends users to the IECC for energy provisions; and reference only to commercial provisions is inappropriate as residential provisions may apply to certain structures.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Jay Crandell, ARES Consulting, representing Foam Sheathing Committee requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1404.3 Air barriers Air barrier materials and assemblies shall comply with the International Energy Conservation Code.

1405.5 Air barrier installation A continuous air barrier shall be provided in accordance with the International Energy Conservation Code.

Commenter's Reason: The need for this proposal is adequately justified as a building code concern related to moisture control because the intended function of vapor retarders are ineffective without coordination with air-barriers. It is a widely recognized building science fact that the function of air-barriers is not just an energy code concern as explained more fully in the reason statement for the original proposal. The building code should embrace and address this fact by making the link to moisture control purposes of air-barriers more transparent (the energy code does not do this and the building code is presently silent on the matter).

Based on feedback at the first hearing, this public comment greatly simplifies the original proposal and addresses concerns raised by the committee as follows:

1. "*Reference only to commercial provisions is inappropriate*" – This concern has been addressed by removing reference to specific commercial provisions of the IECC. Instead, it now more generally refers to air-barrier requirements in the IECC in a manner that is inclusive of appropriate commercial or residential provisions as applicable.
2. "*Having air-barrier requirements in the IBC is inappropriate; they should remain in the IECC*." – Agreed. This proposal keeps all of the air-barrier requirements in the IECC. It is merely making a reference to the IECC to ensure appropriate association of air-barriers in their role for moisture control which is in the scope of the IBC, not the IECC.
3. "*Pointers to the IECC is redundant*" – The IBC points to the IECC only in regard to energy code compliance. The moisture control provisions in Chapter 14, however, are dependent on and affected by air-barrier compliance. There is a direct need for reference to the IECC for this specific code coordination purpose. This is not a redundant reference to the IECC. It is a reference for a specific need and purpose that is otherwise potentially overlooked in coordinating and adopting the ICC family of codes.

Public Comment 2:

Proponent : Theresa Weston, DuPont Building Innovations, representing DuPont Building Innovations (theresa.a.weston@usa.dupont.com) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant *exterior wallenvelope*. The *exterior wallenvelope* shall include flashing, as described in Section 1405.4. The *exterior wallenvelope* shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a *water-resistive barrier* behind the exterior veneer, as described in Section 1404.2, 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 1405.3 and 1405.4.

Exceptions:

1. A weather-resistant *exterior wallenvelope* 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 1404.2 and 1405.4, shall not be required for an *exterior wallenvelope* that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
    - 2.1. *Exterior wallenvelope* test assemblies shall include at least 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 wallenvelope* test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
    - 2.3. *Exterior wallenvelope* assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m^2).
    - 2.4. *Exterior wallenvelope* assemblies shall be subjected to a minimum test exposure duration of 2 hours.The *exterior wallenvelope* design shall be considered to resist wind-driven rain where the results of testing 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.
3. Exterior insulation and finish systems (EIFS) complying with Section 1408.4.1.

1405.4 Air Leakage Control Building envelope air leakage control shall be provided in accordance with the *International Energy Conservaton Code*.

Commenter's Reason: I respectfully disagree with the committee and believe that air leakage control is appropriate for inclusion in the IBC as it is critical to the moisture performance of wall systems and performance of vapor control measures required in Section 1405.3. The revised proposal of this Public Comment directly makes the connection between air barriers and moisture performance by adding a

pointer in Section 1403.2. The air leakage control provisions reference the International Energy Conservation Code, so that either commercial or residential air leakage control requirements are referenced as appropriate for the specific project.

FS154-15

FS156-15

202 (New), 1404.13 (New), Table 1405.2, 1405.15 (New), 1405.15.1 (New), Chapter 35

Proposed Change as Submitted

Proponent : Matthew Dobson, representing Vinyl Siding Institute

2015 International Building Code

Add new text as follows:

SECTION 202 DEFINITIONS

INSULATED VINYL SIDING A vinyl cladding product, with manufacturer-installed foam plastic insulating material as an integral part of the cladding product, having a thermal resistance of not less than R-2.

1404.13 Insulated Vinyl Siding. Insulated vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D 7793 by an approved quality control agency.

TABLE 1405.2
MINIMUM THICKNESS OF WEATHER COVERINGS

COVERING TYPE	MINIMUM THICKNESS (inches)
Insulated Vinyl Siding	0.035 (vinyl siding layer only)

(Portions of table and footnotes not shown remain unchanged)

1405.15 Insulated vinyl siding. Insulated vinyl siding complying with ASTM D7793 shall comply with Section 1405.14.

1405.15.1 Insulated vinyl siding and accessories Insulated vinyl siding and accessories shall be installed in accordance with manufacturer's instructions

Add new standard(s) as follows: ASTM D7793-13 Standard Specification for Insulated Vinyl Siding

Reason: This proposal carries forward changes from the 2015 International Residential Code and 2015 International Energy Conservation Code. Insulated vinyl siding's ASTM standard was developed over the past few years and product is now being certified to this standard. It was not ready for adoption during the last cycle of the International Building Code.
Insulated vinyl siding, which is a form of insulated siding, is included in the 2015 International Energy Conservation Code among the materials that can be used as continuous insulation outside of the building framing to provide the required total wall R-value for buildings in the coldest climate zones.

The foam plastic used with insulated vinyl siding is required to meet the

requirements of Chapter 26 of the IBC.

Installation practices, wind, and height limitations are the same for insulated vinyl siding as vinyl siding. Therefore we have referenced the installation section for vinyl siding for this area.

Cost Impact: Will not increase the cost of construction
This change standardizes a cladding and continuous insulation category and will provide additional options.

Analysis: A review of the standard proposed for inclusion in the code, ASTM D7793, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS156-15 : 1404.13 (New)-DOBSON5330

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee's main objection to this proposal is the lack of fire data submitted to qualify these products. Further, the definition seems limiting in that it only includes foam plastic insulating material.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Matthew Dobson, Vinyl Siding Institute, representing Vinyl Siding Institute (mdobson@vinylsiding.org) requests Approve as Submitted.

Commenter's Reason: Outline of Proposal
This proposal introduces a product category with an established ASTM standard into the building code (IBC). Insulated vinyl siding is already recognized as a type of cladding in the *International Residential Code* through section **R703.13 Insulated Vinyl Siding**. It is also regulated as fully continuous insulation in the *International Energy Conservation Code*.

This change simply recognizes what the IRC, IECC, and ASTM have already recognized and brings the code up to date with the latest standard for Insulated Vinyl Siding, ASTM D7793.

This comment addresses committee questions on fire safety performance and how the code treats cladding, as well as provides information on insulated vinyl siding, foam plastic, and fire performance.

Background on Standard, the IBC and Cladding Regulation

ASTM D7793, provides comprehensive measure of insulated vinyl siding as a cladding and insulation. Specifically it requires the foam plastic insulation to have a flame spread not greater than 75 and a smoke developed index not greater than 450. This is the same as the requirement currently applied by the IBC to *all* foam plastic insulation, in section 2603.3. In other words, the insulation used in insulated

vinyl siding complies with the explicit requirements of the IBC.

Claims may be made that the vinyl siding and foam plastic insulation components of the product should be tested together, but section 2603.3 clearly calls for only the foam plastic insulation to be tested. This prevents other materials from being used to either artificially reduce or enhance the flame spread of the foam plastic. This principle is applied to all applications of foam plastics under the code, not just to that used in insulated vinyl siding.

Clearly, if there were a reason to suspect that the combination of vinyl siding and foam plastic insulation did create a new or unusual hazard, that would provide a reason to apply section 2603.3 differently. But vinyl siding with integral foam backing has been installed and in use on buildings for more than two decades without reports of unusual fire behavior. Furthermore, regular vinyl siding is routinely installed over foam plastic insulated *sheathing*, again without any record of a hazard resulting from the combination. There is no functional difference between this installation, which is clearly permitted by the code, and insulated vinyl siding.

Safety of Product through E84 Testing

In order to further allay any concerns about the effect on flame spread of the vinyl siding/foam plastic combination, the Vinyl Siding Institute sponsored a series of E84 test comparing the flame spread with and without foam plastic insulation of varying thickness, and with and without adhesive joining the foam to the vinyl. Below is a summary of the results and observation:

- The vinyl siding by itself consistently produced a very low flame spread index of 15.
- Foam-backed siding in typical commercial foam thickness of 1.125 inch increased the flame spread index only marginally, with an average of 17.
- Foam-backed siding with an atypically large foam thickness of 1.5 inch produced a moderate increase in flame spread, with an average of 31.5. This is well below the maximum of 75 permitted by the code for foam plastics.
- The presence or absence of adhesive to join the foam backing to the vinyl siding made no discernible difference in flame spread. The flame spread index of 17 resulting from foam-backed siding without adhesive was identical to the average of two tests with adhesive.
- The use of typical ½ inch XPS foam plastic insulated sheathing under the vinyl siding produced a marginal increase over the vinyl alone, with a flame spread of 19.
- In all tests of vinyl siding and vinyl siding in combination with foam plastic, the flame front advanced slowly to a maximum point during the first three to six minutes of the test, and then receded back without further progression.
- Vinyl siding, both with and without foam plastic, self-extinguished beyond the area exposed to the gas burner flame. Within a few seconds of extinguishment of the gas burner there was no further combustion of the sample.
- There is no evidence that the combination of vinyl siding and foam plastic, either as in integral backing or as sheathing, produces an increase in flame spread beyond what would be expected for the materials involved. There was no evidence of abnormal fire behavior resulting from the combination.

(Note: E84 FSI results are normally reported as rounded to the nearest multiple of 5. The raw FSI numbers are reported here in order to show the very small differences in FSI. A more complete summary showing results of individual tests is available.)

Applicability to Cladding

The 2603.3 flame spread requirement applies to all uses of foam plastic insulation, and the insulation used in insulated vinyl siding complies with that. It should be noted that the IBC, with narrow exceptions, does not require *any* flame spread index for vinyl siding and most exterior cladding, whether or not it is combustible and regardless of the material it is made of. The limitations on the use of combustible

exterior wall coverings such as vinyl siding are covered in section 1406. Depending on building construction type, limitations are placed on the height above grade and total wall area of combustible cladding, and the minimum fire separation is determined by the ignition resistance of the cladding when tested under NFPA 268. But no E84 flame spread index requirement is applied to combustible cladding, regardless of the building type or application.

The only known exception to this is when vinyl siding or other combustible claddings are used in an open apartment building breezeway or exterior stairwell landing, which are deemed by ICC Interpretation No. 35-04 to be treated as interior spaces. In these cases combustible exterior cladding would need to comply with interior finish requirements, including the flame spread requirements of Table 803.11. Vinyl siding, and insulated vinyl siding as assembled, would be tested to E84 and need to comply with the appropriate flame spread index in order to be used in this application.

Vinyl Siding's Use with Foam Plastic Sheathing and Insulation

Vinyl siding and foam sheathing have been used safely used together for years and the chart below provides UL rated assemblies with the building components. The point of this chart is to show when tested together and the two products together can pass an E119 rated assembly test for compliance with Table 601 of the IBC. These tests simply demonstrate that the use of the products together can be done safely and have been for a long time.

UL Listing #	**UL Rated Assemblies with Vinyl Siding and Foam Plastic Insulation Description**	**UL 264/E119/ULC-S101 Rating**
U057	Insulated (EPS (5 1/2" thick) Steel Framing Units), 5/8 layers of gypsum (2) inside, vinyl siding on outside with or without sheathing (vinyl siding must have flame spread of 20 or less)	Bearing Wall 1 hours, gypsum side only
U354	2X4 wood studs, 5/8 " thick gypsum board, max 1 1/2" foam plastic insulation with vinyl siding allowed	1 hour rating
U364	2X4 wood studs, 5/8 gypsum, wood sheathing, vinyl siding with flame spread of 20 or less, max 2" polystyrene, vinyl siding with a flame spread of 20 or less	Bearing 1 hour
U057	Insulated (EPS (5 1/2" thick) Steel Framing Units), 5/8 layers of gypsum (2) inside, vinyl siding on outside with or without sheathing (vinyl siding must have flame spread of 20 or less)	Bearing 1 hour
U354	2X4 wood studs, 5/8" gypsum, Max 1 1/2 inch foam sheathing, vinyl siding no flame spread requirements	Bearing wall rating - 1 hour
U364	2X4, 5/8" gypsum, max 2" polystyrene, vinyl siding with max flame spread of 20	Bearing wall rating - 1 hour

U397	2x4, 5/8" gypsum, max 2" polystyrene, vinyl siding with max flame spread of 20, spray applied foam plastic insulation, vinyl siding with 20 or less flame spread	Bearing - 1 hour

Table 601 requires rated assemblies on walls for certain Types of construction, but not for Type VB construction. So the code requires additional testing should it be used with certain types of buildings of certain types of risk categories. This additional requirement is already in place and would be required with certain types of building under the IBC.

When this is the case the manufacturer would be responsible for providing indicating compliance with TABLE 601 FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS) and Table 602 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE.

The code determines when this is necessary based on the risks of the type of building and density.

California Required Test for use Wildfire Prone Areas

Where this product category has demonstrated performance ability based on code requirements and market demand is in California. California Building Code Chapter 12-7a Material and Construction Methods for Exterior Wildfire Exposure requires testing to SFM Standard 12-7a-1. Attached are two example of insulated vinyl siding that have been approved for use by passing this required test in California for use in "Very High Fire Hazard Zones" This is the best current example of how insulated vinyl siding can be safely used in an abnormally high fire risk area that is directly relevant to cladding fire performance.

(As a reminder, in general, the code does not regulate cladding and fire performance because of the low risk factor in typical uses.)

Insulated Siding vs. Insulated Vinyl Siding

To address one other comment made by the committee, this change simply introduces an ASTM standard and product category. The standard allows all major types of foam plastic insulation as a part of vinyl siding. The definition in the International Energy Conservation Code provides a broad definition so that any materials (cladding and/or insulation) can be used, as long as they are tested to exhibit an R-2 or more based on ASTM C1363. We approached this to be as inclusive as possible but please also recognize the development of ASTM D7793 and all the testing that went with it took considerable time. Now that the product category is being used more and more, we think it is appropriate to have it recognized in the code to ensure building officials are clear on how it should be regulated.

Conclusion

The IBC regulates cladding effectively and places additional requirements on cladding when used in higher risk buildings and in higher density settings. Insulated vinyl siding can only be used in these applications if it demonstrates compliance with the code. We believe the substantiated material provided exhibits this clearly and don't think additional requirements are necessary, unless the code requires it. Currently, claddings are regulated well and there has been no evidence, nor proposed changes, that indicate there is a problem with current regulation on cladding in general. If insulated vinyl siding is used where the code places additional fire performance requirements on it, then it will be the responsibility of the manufacturer

to provide those test results to the code official and architect. The evidence provided today indicates achieving necessary results is possible when required.

FS156-15

FS159-15
1405.3

Proposed Change as Submitted

Proponent : Jay Crandell, representing Foam Sheathing Committee of the American Chemistry Council

2015 International Building Code

Revise as follows:

1405.3 Vapor retarders. Vapor retarders as described in Section 1405.3.3 shall be provided in accordance with Sections 1405.3.1 and 1405.3.2~~, or an~~ . An approved design using accepted engineering practice for hygrothermal analysis shall be provided for any of the following conditions:

1. Buildings with high indoor moisture generation.
2. Exterior building envelope assemblies that are enclosed when the framing members or insulation materials exceed 19 percent moisture content.
3. Alternative means and methods to Sections 1405.3.1 and 1405.3.2.

Reason: This proposal establishes some basic (but important) conditions of use associated with the intended performance of the moisture vapor control provisions in the code. These concerns are consistently repeated in various studies, ASTM and ASHRAE guides, expert recommendations, and some state and local codes. Experience has shown that when one or more of these factors is "out of control", they are commonly associated with observed moisture problems in buildings or assemblies. Without these use conditions declared, the provisions of the code may be applied to conditions that they were not intended for and there is no means for enforcement to assist in avoiding such cases. Without these limitations specified (or as an alternative meeting the intent of this proposal), the moisture vapor control requirements should be revised to more specifically address variations in vapor retarder requirements with variations in use conditions and climate to avoid inadvertent misapplication.

Cost Impact: Will not increase the cost of construction
These requirements are already required by the intent of the code and are often done as a matter of good construction practice to control risk and reduce construction cost and business cost in the long run. These factors help control intial wall moisture content which also can reduce short term serviceability or "call-back" costs, such as nail pops or bowing walls.

FS159-15 : 1405.3-CRANDELL5001

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposal based on the following: verifying the moisture content of the building envelope framing is difficult and too time consuming for the local jurisdiction; this will also put a burden on contractors to allow the time for this to be verified; should be specific to wood framing; and the location in Chapter 14 is questionable – not sure this is a fire safety

issue.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : John Woestman, representing the Extruded Polystyrene Foam Association (jwoestman@kellencompany.com) requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1405.3 Vapor retarders. Vapor retarders as described in Section ~~1405.3.3~~ 1405.3.4 shall be provided in accordance with Sections 1405.3.1 ~~and 1405.3.2~~ through 1405.3.3, or an approved design using accepted engineering practice for hygrothermal analysis.

1405.3.1 Installation. Vapor retarders shall be installed in accordance with the manufacturer's installation instructions or an approved design. Where vapor retarders are installed on fully enclosed and unvented cavities of building assemblies, damp- or wet-applied cavity insulation materials, where used, shall be verified to have a moisture content of 25 percent or less prior to enclosure of the cavity and vapor retarder installation.

Commenter's Reason: The need to control material moisture content at the time of enclosure is a well-justified building science fact. It should be noted that the committee's reason for disapproval, did not disagree with the need to control initial moisture content of building materials. However, the committee did provide comments that have been accounted for in this public comment. In addition, comments from various interested parties have been sought and taken into consideration. For additional information and justification, refer to a separate PCs by this proponent on FS159.

Research and common experience has shown that installing an interior vapor retarder and hanging drywall too early before damp- or wet-applied cavity insulation has had time to dry can lead to trapped moisture and extended drying times for all types of wall assemblies. That moisture may lead a number of significant issues. For example, wood framing materials will expand as they absorb moisture from the wet spray insulation. If a wet wall is not afforded sufficient time to dry out before enclosure, the subsequent delayed drying over time may result in mold growth, buckled wall sheathing, damaged material due to high moisture levels, corrosion, nail and screw pops and gaps in the wall assembly that could compromise the integrity of the building envelope.

CIMA Technical Bulletin #3: Standard Practice for the Installation of Sprayed Cellulosic Wall Cavity Insulation (SCWCI), Section 8.4 states: "Installation of the interior finish should not be permitted until the insulation has dried. This should be monitored using the Moisture Meter described in Section 6.6. The SCWCI may be enclosed when it is sufficiently dry, having a measured moisture content of 25% or less. Normal drying will occur within 24 to 48 hours depending upon climatic conditions, depth of fill, and initial moisture content. The manufacturer's recommended drying times shall be followed."

This PC also references the vapor retarder manufacturer's installation instructions which are becoming increasingly important as various types of vapor retarder materials and methods have come into practice.

Public Comment 2:

Proponent : Jay Crandell, ARES Consulting, representing self requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1405.3 Vapor retarders. Vapor retarders as described in Section ~~1405.3.3~~ 1405.3.4 shall be provided in accordance with Sections 1405.3.1 ~~and 1405.3.2~~ through 1405.3.3, or an approved design using accepted engineering practice for hygrothermal analysis.

1405.3.1 Installation. Vapor retarders shall be installed in accordance with the manufacturer's installation instructions or an approved design. Where vapor retarders are installed on fully enclosed and unvented cavities of building assemblies, the following shall apply:

1. Damp- or wet-applied cavity insulation materials, where used, shall be verified to have a moisture content of 25 percent or less prior to enclosure of the cavity and vapor retarder installation.
2. Wood framing materials, where used, shall be verified to have a moisture content of 19 percent or less prior to enclosure of hte cavity and vapor retarder installation.

   Exceptions:

   1. Where confirmed by accepted engineering practice for hygrothermal analysis, the above moisture content limitations shall not apply.
   2. Where wood framing materials having a moisture content greater than 19 percent have been used successfully based on local practice and experience, the requirement to verify moisture content shall not apply.

Commenter's Reason: The need to control material moisture content at the time of enclosure is a well-justified building science fact. It should be noted that the committee's reason for disapproval, did not disagree with the need to control initial moisture content of building materials. However, the committee did provide comments that have been accounted for in this public comment. In addition, comments from various interested parties have been sought and taken into consideration.

First, the following responses are offered to address the committee's reasons for disapproval at the first hearing:

1. "*Verifying moisture content is difficult and time consuming for the local jurisdiction*" – the requirement to verify moisture content levels for treated

wood materials is already in the code for applications where drying in service cannot readily occur. This proposal creates no new burden in that regard. Yet, it does make the application to moisture control provisions of Chapter 14 more transparent. Moisture readings are already commonly made on the jobsite by trades and builders for these other reasons (e.g., confirmation of lumber specification, proper installation of flooring, etc.). All that is required is a moisture meter or a certification by the contractor or trade that moisture was checked. Exceptions are also added to the PC to address alternative solutions and local experience.

2. "*Will put a burden on contractors*" – the code already requires moisture content to be checked (e.g., wood at 19% or less) for structural reasons. By common use of manufacturer installation instructions, the code also implies that moisture levels in materials such as damp-applied cavity insulation are also checked before enclosure. This PC adds no new burden, but does make the requirement more transparent. For contractors currently following the code or good construction practice, these concerns are already being routinely addressed and verified and, in many cases, create no burden with appropriate construction sequencing and control.
3. "*Should be specific to wood framing*" – The PC is revised to make it clear that the 19% MC provisions applies only to wood framing as also required in other parts of the code for other reasons. An exception for wood framing above 19% moisture content (e.g., green lumber as commonly used in the western states) is also provided.
4. "*Location in Chapter 14 is questionable – not sure this is a fire safety issue*" – Chapter 14 addresses more than just fire safety. It addresses moisture control, vapor retarders, cladding, etc.

High moisture levels at the time walls are enclosed is known to cause moisture problems such as mold, serviceability defects, and even damage to materials. This public comment focuses only on this issue and does not attempt to address high indoor relative humidity conditions that also lead to moisture problems, even when code prescribed vapor retarder provision are followed. This proposal will give code officials the option and ability to question and better judge situations that may lead to problems. This PC also provides clear guidance to builders and trades that is no different than existing industry and code recommendations evidenced as follows.

This PC is consistent with similar concerns addressed elsewhere in the code in conditions where drying in service cannot readily occur. For example, refer to IBC Section 2303.1.9.2 for preservative treated wood:

"2303.1.9.2 Moisture content. Where *preservative treated wood* is used in enclosed locations where drying in service cannot readily occur, such wood shall be at a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other materials."

The limitation of framing moisture content is cited in other building publications.

1. The ICC-700, what is the National Green Building Standard for residential homes gives credit when cavity insulation or framing material are dry when enclosed. The moisture content of lumber is sampled to ensure it does not exceed 19 percent prior to the surface and/or cavity enclosure.
2. There are also requirements in the California code to limit framing moisture content at the time of enclosure. Other states also address this concern.

This is further supported by wood industry publications:

1. The Forest Products Laboratory Wood Handbook states that checking moisture content of door and window headers and floor and ceiling joists at the time of enclosure with an electric moisture meter is good practice. When these members approach ambient moisture content, interior finish and trim can normally be installed.

1. The American Wood Council Design of Wood Frame Structures for Permeance states that care should be taken to dry framing cavities to a moisture content less than 20% prior to enclosure.

Keeping the cavity dry at the time of enclosure has benefits in the reducing mold potential, as well as other serviceability issues such as nail pops, squeaky floors, air leakage and other problems related to shrinking materials.

Research and common experience has shown that installing an interior vapor retarder and hanging drywall too early before damp- or wet-applied cavity insulation has had time to dry can lead to trapped moisture and extended drying times for all types of wall assemblies. That moisture may lead a number of significant issues. For example, wood framing materials will expand as they absorb moisture from the wet spray insulation. If a wet wall is not afforded sufficient time to dry out before enclosure, the subsequent delayed drying over time may result in mold growth, buckled wall sheathing, damaged material due to high moisture levels, corrosion, nail and screw pops and gaps in the wall assembly that could compromise the integrity of the building envelope.

CIMA Technical Bulletin #3: Standard Practice for the Installation of Sprayed Cellulosic Wall Cavity Insulation (SCWCI), Section 8.4 states: "Installation of the interior finish should not be permitted until the insulation has dried. This should be monitored using the Moisture Meter described in Section 6.6. The SCWCI may be enclosed when it is sufficiently dry, having a measured moisture content of 25% or less. Normal drying will occur within 24 to 48 hours depending upon climatic conditions, depth of fill, and initial moisture content. The manufacturer's recommended drying times shall be followed."

In addition, ASTM E 1677 also recommends that "When vapor retarders are used on both sides of the opaque wall, precautions should be used to ensure that building materials within the wall cavity have a moisture content below 19%". This statement is based on Lsitburek and Carmody, "Moisture Control Handbook" published by Oak Ridge National Laboratory. Because most walls will have at least interior paint finish (generally a Class III vapor retarder) and exteriors are often less than 10 perm (particularly when the net permeance of multiple exterior layers is considered) and considered to be vapor retarders, it is prudent to control moisture levels of the enclosed materials. Even if a wall assembly has greater than 10 perm on one side (vapor retarder only on one side of the wall), moisture can be driven toward the vapor retarder depending on the time of the year of enclosure, thus delaying drying and causing the moisture to accumulate in materials toward the inside or outside of the construction. Simply put, there are few cases or conditions where high initial moisture levels could be tolerated without consequences.

Public Comment 3:

Proponent : Jay Crandell, ARES Consulting, representing Foam Sheathing Committee requests Approve as Modified by this Public Comment.

Replace Proposal as Follows:

2015 International Building Code

1403.2 **Moisture management.** *Exterior walls* shall be designed and constructed in accordance with this section or an approved design to prevent damaging effects of moisture exposure, retention, and accumulation within *exterior walls*.

~~**1403.2**~~ **1403.2.1** **Weather protection.** Exterior walls shall provide the building with a weather-resistant *exterior wallenvelope*. The *exterior wallenvelope* shall include flashing, as described in Section 1405.4. The *exterior wallenvelope* shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a *water-resistive barrier* behind the exterior veneer, as described in Section 1404.2, 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 1405.3.~~

Exceptions:

1. A weather-resistant *exterior wallenvelope* 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 1404.2 and 1405.4, shall not be required for an *exterior wallenvelope* that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
    - 2.1. *Exterior wallenvelope* test assemblies shall include at least 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 wallenvelope* test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
    - 2.3. *Exterior wallenvelope* assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m^2).
    - 2.4. *Exterior wallenvelope* assemblies shall be subjected to a minimum test exposure duration of 2 hours.The *exterior wallenvelope* design shall be considered to resist wind-driven rain where the results of testing 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.
3. Exterior insulation and finish systems (EIFS) complying with Section 1408.4.1.

1403.2.2 **Material moisture content.** The moisture content of

materials enclosed in a location where drying in service cannot readily occur shall be in accordance with the following:

1. Wood framing materials shall be at a moisture content of 19 percent or less prior to enclosure.
2. Wet- or damp-applied cavity insulation shall be at a moisture content of 25 percent or less prior to enclosure.

Exceptions:

1. Where confirmed by accepted engineering practice for hygrothermal analysis, the above moisture content limitations shall not apply.
2. Where wood framing materials having a moisture content greater than 19 percent have been used successfully based on local practice and experience, the requirement to verify moisture content shall not apply.

1403.2.3 Air barrier. A continuous air barrier shall be provided in accordance with the *International Energy Conservation Code* to protect against condensation and moisture accumulation in the *exterior wall* assembly.

1403.2.4 Vapor retarders. Vapor retarders shall be provided in accordance with Section 1405.3 to protect against condensation and moisture accumulation in the *exterior wall* assembly.

Commenter's Reason: In response to concerns about the location of moisture control provisions in the original proposal and confusion of the committee regarding the moisture control content of Chapter 14, this PC places all of the moisture control provisions in an appropriate location of Chapter 14 that deals with moisture performance of exterior wall assemblies. It takes a comprehensive approach by addressing all of the major sources or causes of moisture problems in exterior wall assemblies: Rain water, initial construction moisture, and moisture vapor as a result of moist-air leakage and diffusion. These all relate to the goal of the original proposal to ensure appropriate use and coordination of limitations and requirements associated with the moisture control provisions in the IBC, particularly the vapor retarder provisions.

The proposal is organized as follows to better convey the moisture control objective of the original proposal and as intended by the code for exterior walls:

1403.2.1 – this existing section (1403.2) deals primarily with rain water resistance of exterior wall assemblies. It is editorially modified only where needed to coordinate with the reformat (no technical changes)

1403.2.2 – addresses initial moisture content of enclosed construction materials to help prevent this well-known and common cause of moisture and serviceability problems in new construction. Refer to separate public comment focusing only on this particular topic for the rationale.

1403.2.3 – addresses air-barrier requirements by reference to the IECC provisions to help prevent moist air movement into and through wall assemblies that can easily negate the purpose of the vapor retarder provisions in the IBC and cause significant moisture accumulation due to moisture-laden air leaks (see separate public comment on FS 154 for this particular topic).

1403.2.4 – provides a pointer to existing vapor retarder provisions in the code to control condensation potential.

In summary, this PC more appropriately organizes the code and addresses all of the moisture "heavy hitters": rain (cladding/WRB/flashing), construction moisture (initial material moisture content), moisture from air infiltration (air-barriers), and moisture from diffusion (vapor retarders).

FS159-15

FS165-15
1405.4, Chapter 35

Proposed Change as Submitted

Proponent : Theresa Weston, DuPont Building Innovations, representing DuPont Building Innovations (theresa.a.weston@usa.dupont.com)

2015 International Building Code

Revise as follows:

1405.4 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 exterior. 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*. When fluid applied membranes are used as flashing, those fluid applied membrane flashings shall comply with AAMA 714.

Add new standard(s) as follows:
AAMA 714-15 Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings

Reason: Fluid applied membranes are gaining in use in the market, but no material property or performance requirements for these materials are currently included in the code. Industry has developed standard AAMA 714 to insure that this type of material meets minimum performance specificatons. This proposal incorporates AAMA 714 by reference into the code. The properties and quality of flashing materials are crucial to the successful implementation of the water management in building envelopes.

Cost Impact: Will not increase the cost of construction
This proposal does not mandate the use of any material, and therefore does not increase code requirements or have associated costs.

Analysis: A review of the standard proposed for inclusion in the code, AAMA 714, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2015.

FS165-15 : 1405.4-WESTON5633

Public Hearing Results

Committee Action: Approved as Modified

Modification:

1405.4 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 exterior. 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. When fluid applied membranes are used as flashing for exterior wall openings, those fluid applied membrane flashings shall comply with AAMA 714.

Committee Reason: Despite the lack of data to show that currently manufactured liquid applied flashing meet this new standard, the committee agreed that AAMA 714 was a proper standard to reference in the code as a specification for liquid applied flashing. The modification properly limits the application to liquid applied flashings that are used as flashings of fenestration in wall assemblies.

Assembly Action : **None**

Individual Consideration Agenda

Public Comment 1:

Proponent : David Johnston, EIFS Industry Members Association, representing EIFS Industry Members Association requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

1405.4 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 exterior. 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*. When fluid applied membranes are used as flashing for exterior wall service openings, those fluid applied membrane flashings shall comply with ~~AAMA 714~~ and be installed in accordance with manufacturer's instructions.

Commenter's Reason: The committee acknowledged that fluid applied flashings are appropriate in certain circumstances. This modification is intended to clarify those circumstances in which they are appropriate. Since AAMA 714, which is a voluntary standard, has criteria that are not pertinent nor appropriate for the Exterior Insulation and Finish Systems industry, the modification also clarifies that conditions

under which fluid applied flashing is to be applied.

FS165-15

FS170-15
2603.3

Proposed Change as Submitted

Proponent : Samir Mokashi (samir.mokashi@codeul.com); Avery Lindeman, Green Science Policy Institute, representing Green Science Policy Institute (avery@greensciencepolicy.org); Veena Singla, Natural Resources Defense Council, representing Natural Resources Defense Council (vsingla@nrdc.org); Bruce Hammond, Hammond & Company Inc., representing Hammond & Company, Inc. (bruce@hammondandcompany.com); Tom Lent, Healthy Building Network, representing Healthy Building Network (tlent@healthybuilding.net); Nancy Hulsey, HKS, Inc. , representing HKS, Inc. (nhulsey@hksinc.com); Vytenis Babrauskas, Fire Science & Technology Inc., representing Fire Science & Technology Inc.; Robin Guenther, representing Perkins+Will (robin.guenther@perkinswill.com); David Eisenberg, Development Center for Appropriate Technology, representing Development Center for Appropriate Technology (strawnet@gmail.com); Marjorie Smith, Siegel & Strain Architects, representing Siegel & Strain Architects (Msmith@siegelstrain.com); Stacia Miller, International Living Future Institute, representing International Living Future Institute (stacia.miller@living-future.org); Clark Brockman, SERA Architects, Inc., representing SERA Architects, Inc. (clarkb@serapdx.com); Larry Strain, representing Siegel & Strain Architects (lstrain@siegelstrain.com); Russ Pitkin, SERA Architects, Inc., representing SERA Architects, Inc; Tony Stefani, representing San Francisco Firefighters Cancer Prevention Foundation; Dennis Murphy, USGBC California, representing USGBC California (dennis@usgbc-california.org); Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net)

2015 International Building Code

Revise as follows:

2603.3 Surface-burning characteristics. Unless otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread and smoke-developed indexes.

Exceptions:

1. Smoke-developed index for interior *trim* as provided for in Section 2604.2.
2. In cold storage buildings, ice plants, food plants, food

processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved *automatic sprinkler system* shall be provided in both the room and that part of the building in which the room is located.

3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256. The smoke-developed index shall not be limited for roof applications.
4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.9 using the thickness and density intended for use.
5. Flame spread and smoke-developed indexes for foam plastic interior signs in *covered and open mall buildings* provided the signs comply with Section 402.6.4.
6. <u>Foam plastic insulation located between a concrete slab on grade and its subgrade. Such insulation shall also be exempt from the limiting oxygen index (LOI) requirements of ASTM C578.</u>

Reason: This proposal exempts foam plastic insulation used between a concrete slab on grade and its subgrade from the flame spread index (FSI) and smoke-developed index (SDI) requirements of Section 2603.3 and from the limiting oxygen index (LOI) criteria of ASTM C578. This will maintain building fire safety while reducing the health and environmental impacts of toxic or potentially toxic flame retardant chemicals, and it will increase consumer choice.
Ignition and propagation of fire requires three elements: fuel, an ignition source, and oxygen. The proposed exemption from FSI, SDI, and LOI requirements applies only to foam plastic insulation protected between a concrete slab on grade and its subgrade, where there is no significant exposure to ignition sources or oxygen. Since the foam plastic insulation will not burn under these conditions, the provisions of Section 2603.3, which limit the surface burning characteristics (FSI and SDI) of foam plastic insulation, are not relevant and provide no fire safety benefit. Similarly, there is no fire safety benefit from meeting the limiting oxygen index (LOI) criteria in ASTM C578. FSI, SDI, and LOI requirements are unnecessary for below-grade uses of foam plastic insulation, where the elements required for a fire do not exist. However, the flame retardants used in foam plastic insulation to meet these requirements pose a significant hazard to human health and ecosystems.

The proposed change does not require additional protection at slab joints or penetrations beyond those required by other applicable code provisions. At these locations it is highly unlikely that foam plastic insulation will be exposed to an ignition source, and if a portion of the insulation were somehow exposed, there would not be sufficient oxygen to propagate fire. Other slab-on-grade insulation that is not substantially covered by the slab, such as insulation between a slab edge and a foundation wall, is not covered by the proposed exception, and must comply with Section 2603.3 as well as Section 2603.4 (thermal barriers).

Satisfying the FSI, SDI, and LOI criteria typically requires the addition of flame retardants to foam plastic insulation. During manufacture and installation, workers are likely to be exposed to these flame retardants, which have been associated with neurological and reproductive impairments, hormonal and immune problems, and cancer. These flame retardants are released into the environment during

manufacture, demolition, and disposal, and they will eventually migrate out of landfills and other repositories. When thermally processed or burned (for instance, in an incinerator or a landfill), insulation containing halogenated flame retardants can generate highly persistent and toxic halogenated dioxins and furans and other toxic combustion byproducts. Exposure to these dioxins and furans has been associated with cancer and other human health and ecological harm.

HBCD (hexabromocyclododecane) is the flame retardant used most commonly in polystyrene insulation, a typical variety of foam plastic insulation used below-grade. In 2013 under the Stockholm Convention, over 150 countries agreed to eliminate HBCD from the global marketplace due to its persistence and toxicity. The chemical alternatives to HBCD are also highly persistent halogenated flame retardants and are expected to have some comparable adverse human health and ecological impacts. Reducing the unnecessary use of harmful flame retardants will reduce exposure and harm to construction workers, emergency responders, the general public, and ecosystems.

The proposed change does not prohibit the use of flame retardants in foam plastic insulation. Instead, it describes conditions under which foam plastic insulation without added flame retardants can be used safely in buildings.

It is envisioned that insulation without flame retardants for use as described in this proposed exception would require labeling that complies with Section 2603.2. This labeling would be the responsibility of the insulation manufacturer, in the same way that it is currently the manufacturer's responsibility to properly label foam plastic insulation for the end uses described in Exceptions 1 through 5 of Section 2603.3.

This code change will maintain fire safety, reduce the adverse health and environmental impacts of toxic flame retardants used in foam plastic insulation, and expand consumer choice.

Cost Impact: Will not increase the cost of construction
The proposed code change will not require any action that increases construction costs since it does not mandate any change from current practice. Utilizing the proposed code change would not require any alteration to design or construction practices. The proposed change would enable voluntary manufacture and use of alternative foam plastic insulation products that do not contain flame retardant chemicals. The cost of using these alternative insulation products may be higher, lower, or the same as the cost of using currently available insulation depending on formulation costs, production volumes, consumer demand, and level of competition.

FS170-15 : 2603.3-LINDEMAN3804

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this change based on the following: Hazards can increase based on misuse of products on the jobsite and during storage and handling of the material to get it manufactured, stored and delivered to the jobsite; no fire test data has been submitted on the product used in this application – fire can get below ground and protection by the slab may not always be enough; the proponents raised a perceived toxicity problem with fire treated foam plastic but provided no data showing the health risk affects of fire treated products.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Avery Lindeman, Green Science Policy Institute, representing Green Science Policy Institute (avery@greensciencepolicy.org); Veena Singla, representing Natural Resources Defense Council; Bruce Hammond, Hammond& Company Inc., representing Hammond & Company Inc.; Tom Lent, Healthy Building Network, representing Healthy Building Network (tlent@healthybuilding.net); Vytenis Babrauskas, Fire Science and Technology Inc., representing Fire Science and Technology Inc.; Marjorie Smith, representing Siegel & Strain Architects (Msmith@siegelstrain.com); Dennis Murphy, representing USGBC California (dennis@usgbc-california.org); Stacia Miller, International Living Future Institute, representing International Living Future Institute (stacia.miller@living-future.org); David Eisenberg, Development Center for Appropriate Technology, representing Development Center for Appropriate Technology (strawnet@gmail.com); Russ Pitkin, representing SERA Architects, Inc. (russp@serapdx.com); Kathy Gerwig, Kaiser Permanente, representing Kaiser Permanente; Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net); Nancy Hulsey, representing HKS, Inc. (nhulsey@hksinc.com); Larry Strain, representing Siegel & Strain Architects (lstrain@siegelstrain.com); Samir Mokashi, Code Unlimited, representing Green Science Policy Institute (samir.mokashi@codeul.com); Tony Stefani, representing San Francisco Firefighters Cancer Prevention Foundation (stefanit@sbcglobal.net); Amanda Kaminsky, representing The Durst Organization (akaminsky@durst.org); Suzanne Drake, representing Perkins+Will (suzanne.drake@perkinswill.com); Ernest Pacheco, representing Communications Workers of America - District 9 (erniepacheco@cwa9412.org); Karen Burbano, representing REWS [e] team, Design & Construction Integrator (kburbano@google.com); Donald Lucas (d_lucas@lbl.gov); Charlotte Brody, representing BlueGreen Alliance (cbrody@bluegreenalliance.org); Jen Jackson, representing San Francisco Dept of the Environment and San Francisco Fire Dept (cynthia.jackson@sfgov.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

2603.3 Surface-burning characteristics. ~~Unless~~ Except as provided for in Section 2603.3.1 or otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread and smoke-developed indexes.

Exceptions:

1. Smoke-developed index for interior *trim* as provided for in

Section 2604.2.

2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved *automatic sprinkler system* shall be provided in both the room and that part of the building in which the room is located.
3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256. The smoke-developed index shall not be limited for roof applications.
4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.9 using the thickness and density intended for use.
5. Flame spread and smoke-developed indexes for foam plastic interior signs in *covered and open mall buildings* provided the signs comply with Section 402.6.4.
6. ~~Foam plastic insulation located between a concrete slab on grade and its subgrade. Such insulation shall also be exempt from the limiting oxygen index (LOI) requirements of ASTM C578.~~

2603.3.1 Insulation between a concrete slab on grade and its subgrade. Flame spread index and smoke-developed index as specified in Section 2603.3 shall not be required for foam plastic insulation located between a concrete slab on grade and its subgrade. Such insulation shall not be subject to oxygen index limits. Vertical insulation at the perimeter of a slab shall meet the requirements of 2603.3.

Commenter's Reason: This Public Comment modifies the original proposal to address feedback from the 2015 IBC - Fire Safety Code Committee and stakeholders. It creates a sub-section under 2603.3 that specifies below-grade uses of foam plastic insulation for which there are no flame spread, smoke-developed, or oxygen index requirements. Use of this proposed change would be optional; the proposed change would not mandate any alteration to current building practice. It would maintain fire safety and increase consumer choice of insulation products for safe use below-grade.

This proposed change covers insulation of concrete slabs on grade. **Figure 1** and **Figure 2** below depict examples of insulation where this proposed change could be used. Uses covered by this proposed change are different from those covered by FS 171-15.

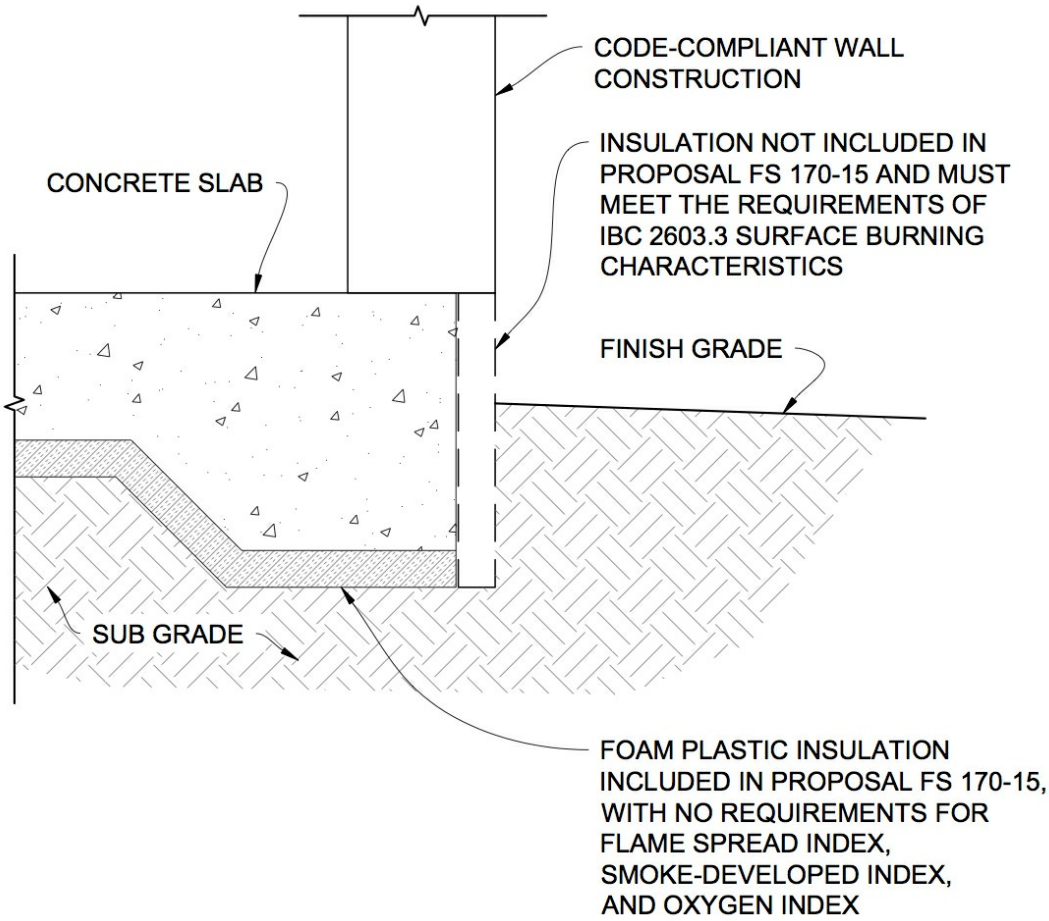


Figure 1: UNDER-SLAB INSULATION AT THICKENED SLAB EDGE

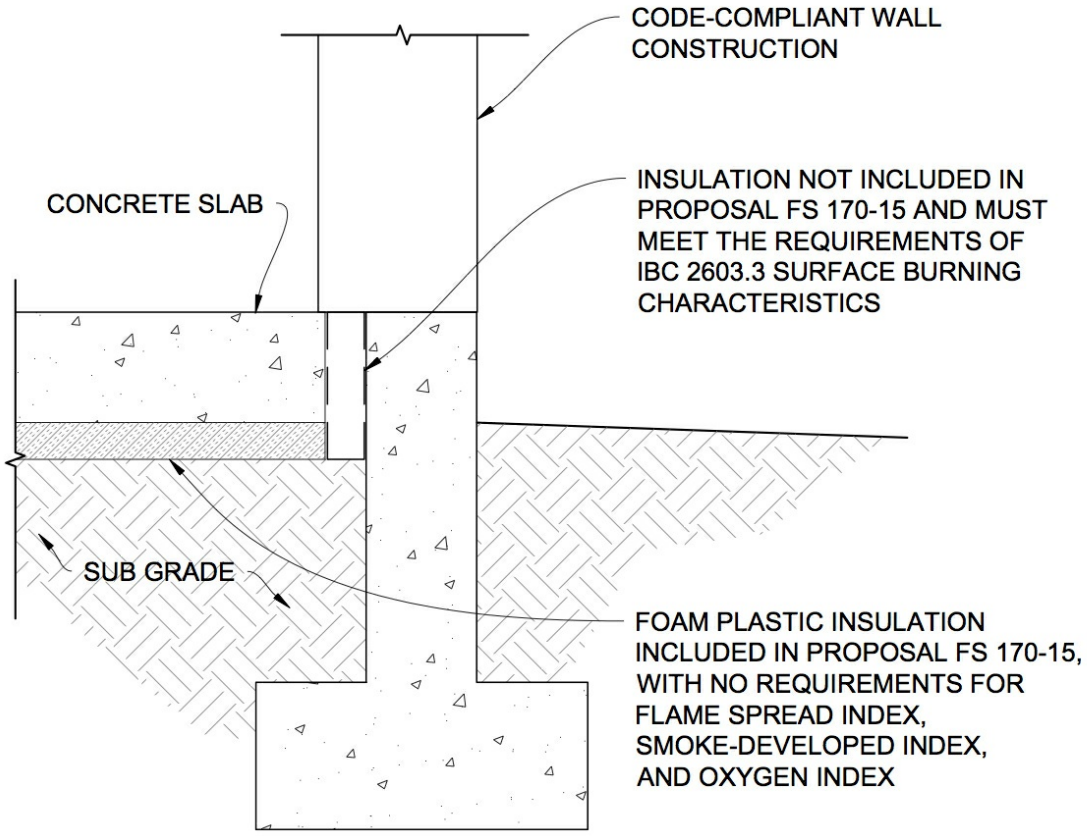


Figure 2: UNDER-SLAB INSULATION AT STEM WALL

This proposed change would maintain fire safety in the following ways:

- Insulation installed in accordance with this proposed code change would be completely separated from the building interior.
- Insulation installed in accordance with this proposed code change does not have access to a realistic source of ignition because it is protected between a minimum of 3.5 inches (89 mm) of concrete and the sub-grade material, as specified in IBC Section **1907 Minimum slab provisions**.
- Insulation installed in accordance with this proposed code change would not have access to adequate oxygen to sustain a fire, as demonstrated by results from preliminary fire tests of below-grade foam plastic insulation. These tests are described below.

Description of Tests: There is no established fire test method for the

configurations covered by this proposed code change, and the co-commenters are unaware of data on flame spread or smoke-developed between concrete and sub-grade material for foams of various material properties. Therefore, in response to requests for testing data of the assemblies included under this proposed code change, Dr. David Rich at Reax Engineering Inc., and Dr. Donald Lucas (Lawrence Berkeley National Laboratory) and Avery Lindeman (Green Science Policy Institute), conducted preliminary tests to evaluate how different foam plastic insulation materials installed below grade would react when subjected to a range of reasonably foreseeable fire spread scenarios.

The insulation materials were sandwiched between concrete pavers (2 inches thick) and earth or other noncombustible surface and ignited at an opening in the pavers to observe fire spread beneath the simulated concrete slab. Tests were conducted with and without an externally applied radiant heat flux comparable to a post-flashover fire condition. Two types of insulation were tested: one that complied with the requirements of International Building Code (IBC) Section **2603.3 Surface burning characteristics**; and a similar below-grade insulation material that did not comply with Section 2603.3 requirements. When there were no openings between the concrete pavers, neither sample of insulation ignited, even at conditions where melting occurred. When there were significant openings (16 square inches) or gaps (2.5 inches) between the concrete pavers, and insulation was subjected to an open flame ignition source and an external heat flux, both samples ignited and burned comparably; however, without an external heat flux, ignition of insulation was followed by limited flame spread, and flames self-extinguished due to restricted access to oxygen as the flame burned away from the opening in the pavers.

- Insulation installed in accordance with this proposed code change would still be subject to the labeling and identification requirements of Section **2603.2 Labeling and identification**, ensuring that foam plastic insulation would be labeled with the product identification and sufficient information to determine that the end use complies with the code requirements.

Oxygen index is not currently limited in Chapter 26 of the IBC. However, the acceptance criteria for certain types of foam plastic insulation (AC12: Acceptance Criteria for Foam Plastic Insulation) require testing to ASTM C578, which limits the permitted oxygen index of polystyrene insulation materials. The purpose of this index is to measure the percent of oxygen in air needed to sustain combustion in a candle-like fire. This is not relevant for the proposed uses of below-grade foam plastic insulation, as demonstrated by the preliminary fire tests discussed above. Oxygen Index would therefore not be limited for insulation covered by this proposed code change.

We are aware of concerns that this proposed code change may increase the fire hazard of foam plastic insulation materials during the transportation, storage, and installation stages of the product lifecycle. If this proposal is approved, we feel that current practices will maintain the current level of fire safety throughout these stages as described below:

- **Transportation:** the U.S. Department of Transportation does not differentiate between foam plastic materials based on surface burning characteristics. Special safety measures are not required for the bulk shipment of foam plastics, including food-grade materials and other foam plastics with varying material properties.
- **Storage and Installation:** As stated in a 2003 Technical Bulletin from the Alliance for the Polyurethanes Industry, "All organic foam insulations, regardless of whether they contain fire retardants, should be considered combustible and handled accordingly. Certain precautions must be taken to minimize any potential for fire through accidental ignition in handling, storage, and use." Therefore the surface burning characteristics required in Section 2603.3 are not sufficient to provide fire safety, and the following practices

should be followed regardless of the Flame Spread and Smoke Developed Indexes of the materials present:

- In accordance with OSHA Regulations for Occupational Safety and Heath and Construction, worksite storage of foam plastics and other flammable materials should be done safely and in a way that does not block exits. The Alliance for the Polyurethane Industry recommends that foam boardstock be stored "in limited quantities, in an accessible location, and free from ignition hazards."
- OSHA regulations also require that hot work adhere to NFPA 51B, which stipulates that activities like welding and cutting should only be performed when appropriate precautions are taken. These include removal or proper protection from sparks, heat, or hot metal of any flammable materials in the vicinity of the work.

The proposed code change does not prohibit the use of foam plastic insulation that meets the requirements of Section 2603.3. Instead, it describes uses in construction where foam plastic insulation may be used safely without requiring the surface burning characteristics specified in Section 2603.3. Use of this proposed change would be optional and would maintain fire safety.

FS170-15

FS171-15
2603.3

Proposed Change as Submitted

Proponent : Samir Mokashi (samir.mokashi@codeul.com); Avery Lindeman, Green Science Policy Institute, representing Green Science Policy Institute (avery@greensciencepolicy.org); Veena Singla, Natural Resources Defense Council, representing Natural Resources Defense Council (vsingla@nrdc.org); Vytenis Babrauskas, Fire Science & Technology Inc., representing Fire Science & Technology Inc.; Tom Lent, Healthy Building Network, representing Healthy Building Network (tlent@healthybuilding.net); Tony Stefani, representing San Francisco Firefighters Cancer Prevention Foundation (stefanit@sbcglobal.net); Bruce Hammond, Hammond & Company Inc., representing Hammond & Company Inc. (bruce@hammondandcompany.com); Nancy Hulsey, HKS, Inc., representing HKS, Inc. (nhulsey@hksinc.com); Robin Guenther, representing Perkins+Will (robin.guenther@perkinswill.com); David Eisenberg, Development Center for Appropriate Technology, representing Development Center for Appropriate Technology (strawnet@gmail.com); Marjorie Smith, Siegel & Strain Architects, representing Siegel & Strain Architects (Msmith@siegelstrain.com); Stacia Miller, International Living Future Institute, representing International Living Future Institute (stacia.miller@living-future.org); Clark Brockman, SERA Architects, Inc., representing SERA Architects, Inc. (clarkb@serapdx.com); Larry Strain, representing Siegel& Strain Architects (lstrain@siegelstrain.com); Russ Pitkin, SERA Architects, Inc., representing SERA Architects, Inc.; Kathy Gerwig, representing Kaiser Permanente; Dennis Murphy, USGBC California, representing USGBC California (dennis@usgbc-california.org); Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net)

2015 International Building Code

Revise as follows:

2603.3 Surface-burning characteristics. Unless otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread and smoke-developed indexes.

Exceptions:

1. Smoke-developed index for interior *trim* as provided for in Section 2604.2.
2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved *automatic sprinkler system* shall be provided in both the room and that part of the building in which the room is located.
3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256. The smoke-developed index shall not be limited for roof applications.
4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.9 using the thickness and density intended for use.
5. Flame spread and smoke-developed indexes for foam plastic interior signs in *covered and open mall buildings* provided the signs comply with Section 402.6.4.
6. <u>Foam plastic insulation located a minimum of 6 inches (152 mm) below finished grade and separated from building interiors by a masonry or concrete wall or foundation. Such insulation shall also be exempt from the limiting oxygen index (LOI) requirements of ASTM C578.</u>

Reason: This proposal exempts foam plastic insulation used below grade and separated from the building interior from the flame spread index (FSI) and smoke-developed index (SDI) requirements of Section 2603.3 and from the limiting oxygen index (LOI) criteria of ASTM C578. This will maintain building fire safety while reducing the health and environmental impacts of toxic or potentially toxic flame retardant chemicals, and it will increase consumer choice.
Ignition and propagation of fire requires three elements: fuel, an ignition source, and oxygen. The proposed exemption from FSI, SDI, and LOI requirements applies only to foam plastic insulation that is at least 6 inches below finish grade, where there is no significant exposure to ignition sources or oxygen. Since the foam plastic insulation will not burn under these conditions, the provisions of Section 2603.3, that limit surface burning characteristics (FSI and SDI) of foam plastic insulation, are not relevant and provide no fire safety benefit. Similarly, there is no fire safety benefit from meeting the limiting oxygen index (LOI) criteria in ASTM C578. FSI, SDI, and LOI requirements are unnecessary for below-grade uses of foam plastic insulation, where the elements required for a fire do not exist. However, the flame retardants used in foam plastic insulation to meet these requirements pose a significant hazard to human health and ecosystems.

The proposed change does not require additional protection at below-grade wall penetrations beyond those required by other applicable code provisions. At these locations it is highly unlikely that foam plastic insulation on the exterior side of the wall will be exposed to an ignition source, and if a portion of the insulation were somehow exposed, there would not be sufficient oxygen to propagate fire.

Satisfying the FSI, SDI, and LOI criteria typically requires the addition of flame retardants to foam plastic insulation. During manufacture and installation, workers are likely to be exposed to these flame retardants, which have been associated with

neurological and reproductive impairments, hormonal and immune problems, and cancer. These flame retardants are released into the environment during manufacture, demolition, and disposal, and they will eventually migrate out of landfills and other repositories. When thermally processed or burned (for instance, in an incinerator or a landfill), insulation containing halogenated flame retardants can generate highly persistent and toxic halogenated dioxins and furans and other toxic combustion byproducts. Exposure to these dioxins and furans has been associated with cancer and other human health and ecological harm.

HBCD (hexabromocyclododecane) is the flame retardant used most commonly in polystyrene insulation, a typical variety of foam plastic insulation used below-grade. In 2013 under the Stockholm Convention, over 150 countries agreed to eliminate HBCD from the global marketplace due to its persistence and toxicity. The chemical alternatives to HBCD are also highly persistent halogenated flame retardants and are expected to have some comparable adverse health and ecological impacts. Reducing the unnecessary use of harmful flame retardants will reduce exposure and harm to construction workers, emergency responders, the general public, and ecosystems.

The proposed change does not prohibit the use of flame retardants in foam plastic insulation. Instead, it describes conditions under which foam plastic insulation without flame retardants can be used safely in buildings. This change would include below-grade insulation placed horizontally for frost-protected shallow foundations per Section 1809.5(2); such insulation must also comply with the insulation protection requirements of this section and the referenced standard ASCE 32.

It is envisioned that insulation without flame retardants for use as described in this proposed exception would require labeling that complies with Section 2603.2. This labeling would be the responsibility of the insulation manufacturer, in the same way that it is currently the manufacturer's responsibility to properly label foam plastic insulation for the end uses described in Exceptions 1 through 5 of Section 2603.3.

This code change will maintain fire safety, reduce the adverse health and environmental impacts of toxic flame retardants used in foam plastic insulation, and expand consumer choice.

Cost Impact: Will not increase the cost of construction
The proposed code change will not require any action that increases construction costs since it does not mandate any change from current practice. Utilizing the proposed code change would not require any alteration to design or construction practices. The proposed change would enable voluntary manufacture and use of alternative foam plastic insulation products that do not contain flame retardant chemicals. The cost of using these alternative insulation products may be higher, lower, or the same as the cost of using currently available insulation depending on formulation costs, production volumes, consumer demand, and level of competition.

FS171-15 : 2603.3-LINDEMAN3805

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this change based on the following: no fire test data has been submitted on the product used in this application – fire can get below ground and protection by the masonry or concrete wall or foundation may not always be enough; this is a more susceptible location than that proposed in FS170; and the 6 inch dimension is arbitrary and may not always be there after occupancy causing an exposure issue, which could then increase flame spread to other portions of the exterior of the building.

Individual Consideration Agenda

Public Comment 1:

Proponent : Avery Lindeman, Green Science Policy Institute, representing Green Science Policy Institute (avery@greensciencepolicy.org); Veena Singla, representing Natural Resources Defense Council; Bruce Hammond, Hammond & Company Inc., representing Hammond & Company Inc.; Tom Lent, Healthy Building Network, representing Healthy Building Network (tlent@healthybuilding.net); Vytenis Babrauskas, Fire Science and Technology Inc., representing Fire Science and Technology Inc.; Marjorie Smith, representing Siegel & Strain Architects (Msmith@siegelstrain.com); Stacia Miller, International Living Future Institute, representing International Living Future Institute (stacia.miller@living-future.org); Russ Pitkin, SERA Architects, Inc., representing SERA Architects, Inc (russp@serapdx.com); Dennis Murphy, representing USGBC California (dennis@usgbc-california.org); David Eisenberg, Development Center for Appropriate Technology, representing Development Center for Appropriate Technology (strawnet@gmail.com); Tony Stefani, representing San Francisco Firefighters Cancer Prevention Foundation (stefanit@sbcglobal.net); Martin Hammer, representing Martin Hammer, Architect (mfhammer@pacbell.net); Nancy Hulsey, representing HKS, Inc. (nhulsey@hksinc.com); Larry Strain, representing Siegel & Strain Architects (lstrain@siegelstrain.com); Samir Mokashi, Code Unimited, representing Green Science Policy Institute (samir.mokashi@codeul.com); Amanda Kaminsky, representing The Durst Organization (akaminsky@durst.org); Kathy Gerwig, representing Kaiser Permanente; Suzanne Drake, representing Perkins+Will (suzanne.drake@perkinswill.com); Ernest Pacheco, representing Communications Workers of America - District 9 (erniepacheco@cwa9412.org); Karen Burbano, representing REWS [e] team, Design & Construction Integrator (kburbano@google.com); Donald Lucas (d_lucas@lbl.gov); Charlotte Brody, representing BlueGreen Alliance (cbrody@bluegreenalliance.org); Jen Jackson, representing San Francisco Dept of the Environment and San Francisco Fire Dept (cynthia.jackson@sfgov.org) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

2603.3 Surface-burning characteristics. ~~Unless~~ Except as provided for in Section 2603.3.1 or otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use

in accordance with ASTM E 84 or UL 723. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread and smoke-developed indexes.

Exceptions:

1. Smoke-developed index for interior *trim* as provided for in Section 2604.2.
2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved *automatic sprinkler system* shall be provided in both the room and that part of the building in which the room is located.
3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256. The smoke-developed index shall not be limited for roof applications.
4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.9 using the thickness and density intended for use.
5. Flame spread and smoke-developed indexes for foam plastic interior signs in *covered and open mall buildings* provided the signs comply with Section 402.6.4.
6. ~~Foam plastic insulation located a minimum of 6 inches (152 mm) below finished grade and separated from building interiors by a masonry or concrete wall or foundation. Such insulation shall also be exempt from the limiting oxygen index (LOI) requirements of ASTM C578.~~

2603.3.1 Exterior below-grade wall or foundation insulation. Flame spread index and smoke-developed index as specified in Section 2603.3 shall not be required for foam plastic insulation separated from the building interior by a masonry or concrete wall or foundation in the following locations:

1. Vertical insulation installed a minimum of 6 inches (152 mm) below finished exterior grade.
2. Horizontal insulation installed a minimum of 12 inches (304 mm) below finished exterior grade and extending no more than 24 inches outward from the foundation edge.
3. Horizontal insulation installed below finished exterior grade and protected by a concrete slab on the ground surface directly above the insulation.

Oxygen index shall not be limited for such insulation.

Commenter's Reason: This Public Comment modifies the original proposal to

address feedback from the 2015 IBC - Fire Safety Code Committee and stakeholders. It creates a sub-section under 2603.3 that specifies below-grade uses of foam plastic insulation for which there are no flame spread, smoke-developed, and oxygen index requirements. Use of this proposed change would be optional; the proposed change would not mandate any alteration to current building practice. It would maintain fire safety and increase consumer choice of insulation products for safe use below-grade.

This proposed change covers exterior insulation for basement and foundation walls and frost-protected shallow foundations. **Figure 1** and **Figure 2** below depict examples of insulation where the proposed change could be used. Uses covered by this proposed change are different from those covered by FS 170-15.

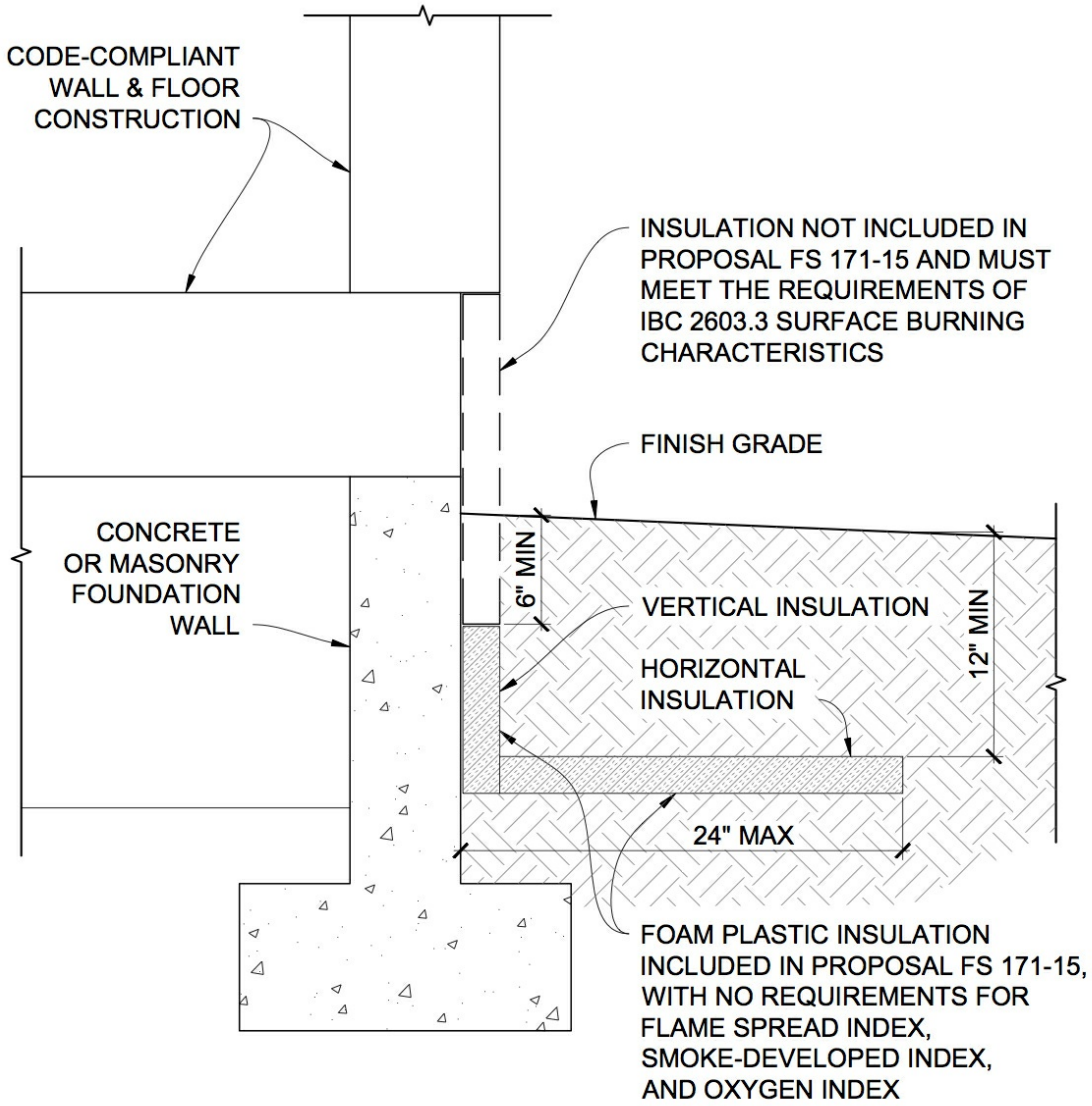


Figure 1: EXTERIOR BELOW-GRADE INSULATION

Proposed Code Section 2603.3.1 (1) and 2603.3.1 (2)

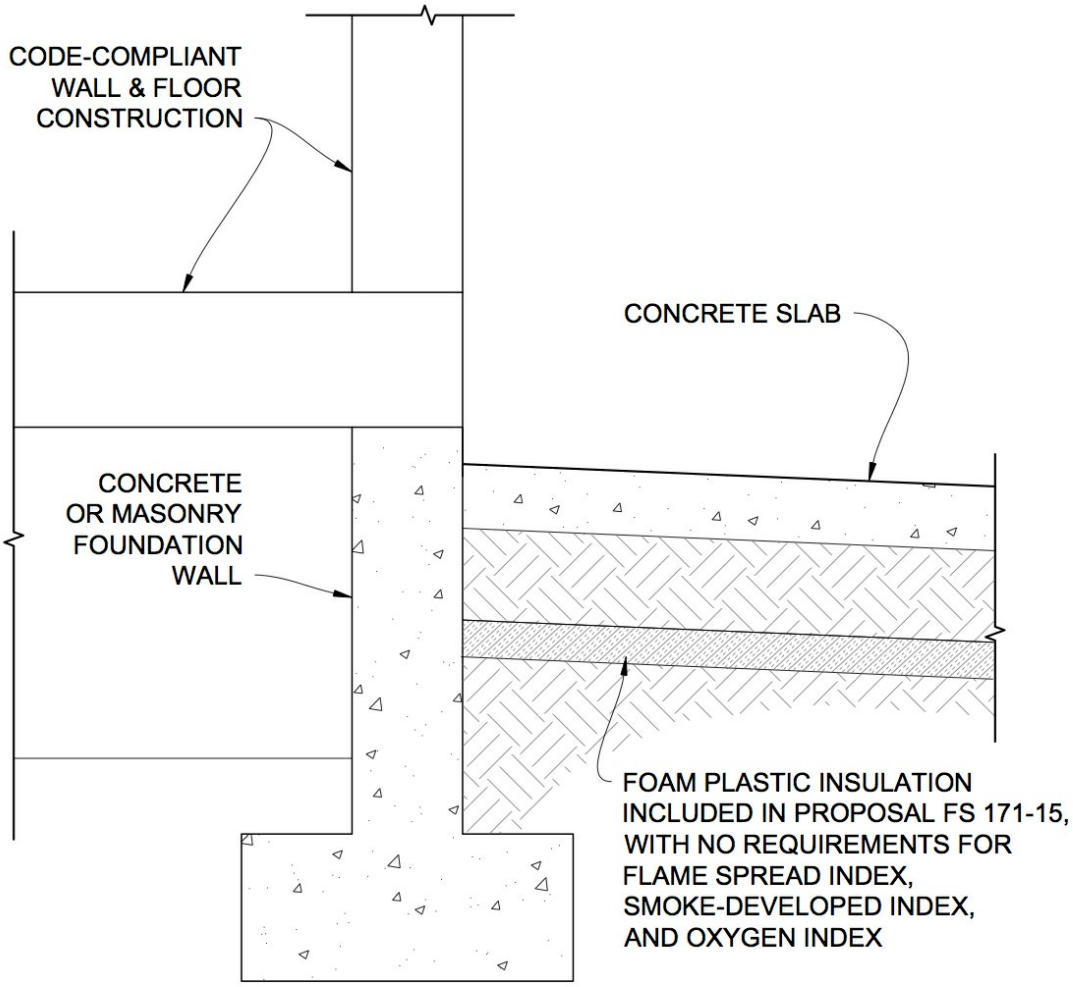


Figure 2: EXTERIOR BELOW-GRADE INSULATION WITH CONCRETE SLAB PROTECTION
Proposed Code Section 2603.3.1 (3)

This proposed change would maintain fire safety in the following ways:

- Insulation installed in accordance with this proposed code change would be completely separated from the building interior.
- Insulation installed in accordance with this proposed code change would not have access to a realistic source of ignition because it is completely protected by concrete, masonry, or soil. Due to concerns that insulation covered by this proposal might become exposed during the course of use, the following publications provided precedent for establishing adequate protection. All four references establish protection requirements for insulation installed below finished exterior grade. Insulation installed in accordance with these codes and standards is considered sufficiently protected from possible damage or exposure. Where requirements differed between these documents, the most

conservative protection requirements were used. See **Table 1** for further detail.

- The 2015 International Building Code (IBC) Section **1809.5 Frost protection**
- ASCE 32-01: Design and Construction of Frost Protected Shallow Foundations
- The 2015 International Energy Conservation Code (IECC), Sections **C303.2.1 Protection of exposed foundation insulation** and **C402.2.6 Slabs on grade**
- The 2015 International Residential Code (IRC) **Section 403.3.2 Protection of horizontal insulation below ground**

- Insulation installed in accordance with this proposed code change would not have access to adequate oxygen to sustain a fire, as demonstrated by results from preliminary fire tests of below-grade foam plastic insulation. These tests are described below.

  Description of Tests: There is no established fire test method for the configurations covered by this proposed code change, and the co-commenters are unaware of data on flame spread or smoke-developed between concrete and sub-grade material for foams of various material properties. Therefore, in response to requests for testing data of the assemblies included under this proposed code change, Dr. David Rich at Reax Engineering Inc., and Dr. Donald Lucas (Lawrence Berkeley National Laboratory) and Avery Lindeman (Green Science Policy Institute), conducted preliminary tests to evaluate how different foam plastic insulation materials installed below grade would react when subjected to a range of reasonably foreseeable fire spread scenarios.

  The insulation materials were sandwiched between concrete pavers (2 inches thick) and earth or other non-combustible surface and ignited at an opening in the pavers to observe fire spread beneath the simulated concrete slab. Tests were conducted with and without an externally applied radiant heat flux comparable to a post-flashover fire condition. Two types of insulation were tested: one that complied with the requirements of International Building Code (IBC) Section **2603.3 Surface burning characteristics**; and a similar below-grade insulation material that did not comply with Section 2603.3 requirements. When there were no openings between the concrete pavers, neither sample of insulation ignited, even at conditions where melting occurred. When there were significant openings (16 square inches) or gaps (2.5 inches) between the concrete pavers, and insulation was subjected to an open flame ignition source and an external heat flux, both samples ignited ands burned comparably; however, without an external heat flux, ignition of insulation was followed by limited flame spread, and flames self-extinguished due to restricted access to oxygen as the flame burned away from the opening in the pavers.

- Insulation installed in accordance with this proposed code change would still be subject to the labeling and identification requirements of Section **2603.2 Labeling and identification**, ensuring that foam plastic insulation would be labeled with the product identification and sufficient information to determine that the end use complies with the code requirements.

Table 1: Comparison of Proposed Provisions with Existing Codes and Standards

Proposed Code Section	Proposed Code Language	Summary of Relevant Existing Codes and Sta
	Vertical insulation installed a minimum	IECC Section C303.2.1 and ASCE 32 require that a

2603.3.1 (1)	of 6 inches (152 mm) below finished exterior grade.	foundation wall insulation extend at least 6 inches against "ultraviolet radiation, physical damage, or protective covering is required.
2603.3.1 (2)	Horizontal insulation installed a minimum of 12 inches (304 mm) below finished exterior grade and extending no more than 24 inches outward from the foundation edge.	IBC Section 1809.5 allows for frost protection of sl require additional protection of insulation when in does not extend outward more than 24 inches fro to be protected by a minimum of 10 inches of soil. change.
2603.3.1 (3)	Horizontal insulation installed below finished exterior grade and protected by a concrete slab on the ground surface directly above the insulation.	ASCE 32 requires that horizontal insulation installe portion "extending outward more than 24 inches f or asphalt pavement on the ground surface direct on the top surface of the insulation. IRC Section R concrete slab" subject to requirements of IBC Sec thickness of 3.5 inches (89 mm). IECC Section C40 protected by pavement or by a minimum of 10 incl conservative of these requirements, which is prote thick.

Oxygen index is not currently limited in Chapter 26 of the IBC. However, the acceptance criteria for certain types of foam plastic insulation (AC12: Acceptance Criteria for Foam Plastic Insulation) require testing to ASTM C578, which limits the permitted oxygen index of polystyrene insulation materials. The purpose of this index is to measure the percent of oxygen in air needed to sustain combustion in a candle-like fire. This is not relevant for the proposed uses of below-grade foam plastic insulation, as demonstrated by the preliminary fire tests discussed above. Oxygen Index would therefore not be limited for insulation covered by this proposed code change.

We are aware of concerns that this proposed code change may increase the fire hazard of foam plastic insulation materials during the transportation, storage, and installation stages of the product lifecycle. If this proposal is approved, we feel that current practices will maintain the current level of fire safety throughout these stages as described below:

- **Transportation:** the U.S. Department of Transportation does not differentiate between foam plastic materials based on surface burning characteristics. Special safety measures are not required for the bulk shipment of foam plastics, including food-grade materials and other foam plastics with varying material properties.
- **Storage and Installation:** As stated in a 2003 Technical Bulletin from the Alliance for the Polyurethanes Industry, "All organic foam insulations, regardless of whether they contain fire retardants, should be considered combustible and handled accordingly. Certain precautions must be taken to minimize any potential for fire through accidental ignition in handling, storage, and use." Therefore the surface burning characteristics required in Section 2603.3 are not sufficient to provide fire safety, and the following practices should be followed regardless of the Flame Spread and Smoke Developed Indexes of the materials present:
    - In accordance with OSHA Regulations for Occupational Safety and Heath and Construction, worksite storage of foam plastics and other flammable materials should be done safely and in a way that does not block exits. The Alliance for the Polyurethane Industry recommends that foam boardstock be stored "in limited quantities, in an accessible location, and free from ignition hazards."
    - OSHA regulations also require that hot work adhere to NFPA 51B, which

stipulates that activities like welding and cutting should only be performed when appropriate precautions are taken. These include removal or proper protection from sparks, heat, or hot metal of any flammable materials in the vicinity of the work.

The proposed change does not prohibit the use of foam plastic insulation that meets the requirements of Section 2603.3. Instead, it describes uses in construction where foam plastic insulation may be used safely without requiring the surface burning characteristics specified in Section 2603.3. Use of this proposed change would be optional and would maintain fire safety.

FS171-15

FS173-15
2603.5.5

Proposed Change as Submitted

Proponent : John Woestman, Kellen Company, representing Extruded Polystyrene Foam Association (XPSA) (jwoestman@kellencompany.com)

2015 International Building Code

Revise as follows:

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 and the foam plastic insulation shall comply with the provisions of Section 2603.5.4.

Exceptions:

1. One-story buildings complying with Section 2603.4.1.4.
2. 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 E 84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).

Reason: This proposed code change clarifies the existing dual requirement of a satisfactory NFPA 285 test in Section 2603.5.5 and an ASTM E 84 / UL 723 test in Section 2603.5.4. This proposal does not add any additional test requirements to the code. There is currently a misunderstanding in the market that a foam plastic insulation material which would not meet the ASTM E84 Class A performance requirements is allowed by the code to be used in an assembly which has passed the NFPA 285 assembly fire test. This proposal clarifies the applicability of the code provisions of 2603.5.4, by requiring a Class A material in an NFPA 285 assembly.

Cost Impact: Will not increase the cost of construction
No cost increase. Proposed change reinforces current code requirement.

FS173-15 : 2603.5.5-WOESTMAN5564

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee felt that the proposed language was redundant and unnecessary.

Individual Consideration Agenda

Public Comment 1:

Proponent : John Woestman, Kellen, representing Extruded Polystyrene Foam Association (XPSA) (jwoestman@kellencompany.com) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

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 ~~and the~~ . The foam plastic insulation component of the exterior wall assembly shall comply with ~~the provisions of~~ Section 2603.5.4.

Exceptions:

1. One-story buildings complying with Section 2603.4.1.4.
2. 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 E 84 or UL 723 and the maximum airspace between the insulation and the concrete or masonry is not more than 1 inch (25 mm).

Commenter's Reason: Addressing the committee reason, we agree. But, unfortunately, we are also seeing situations where the interpretation and application of the code is not consistent with the code requirements. We are proposing this revised language to reinforce that foam plastic insulation used in exterior wall assemblies is required to meet the insulation material fire performance requirements of 2603.5.4 and the wall assembly fire performance requirements of 2603.5.5.

FS173-15

FS178-15

2603.7, 2603.7.1, 2603.7.2

Proposed Change as Submitted

Proponent : Tony Crimi, representing North American Insulation Manufacturers Association (tcrimi@sympatico.ca)

2015 International Building Code

2603.7 Foam plastic insulation used as interior finish or interior trim in plenums. Foam plastic insulation used as interior wall or ceiling finish or as interior trim in plenums shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 and shall comply with one or more of Sections 2603.7.1, 2603.7.2 and 2607.3.

2603.7.1 Separation required. The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.

Revise as follows:

2603.7.2 Approval. The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria of Section 803.1.2 when tested in accordance with NFPA 286. ~~The foam plastic insulation shall be approved based on tests conducted in accordance with Section 2603.9.~~

Reason: The last sentence of 2603.7.2 creates a conflict with the remainder of the requirement.
IBC 2603.7 and 2603.7.1 are clear in stating that ASTM E84 or UL 723 are to be used to determine the flame spread index and smoke developed index. This is very typical in the IBC. IBC 2603.7.2 also identifies the required test methods as ASTM E 84 and UL 723, and the required ratings to be derived from those tests, and identifies NFPA 286 and the acceptance criteria in 803.1.2 (which includes smoke measurement) as a requirement.

The problem is then with the last sentence of 2603.7.2 which directs the Code official to "approve" the insulation based on a different set of room fire tests, which do not all provide a flame spread and smoke developed value. It is not clear if this is to be in addition to the flame spread and smoke developed results, or in place of those tests.

Since 2603.9 does not exempt the material from compliance with 2603.7, it appears that both sets of criteria must be met. This is reasonable in that 3 of the 4 large-scale tests identified in 2603.9 do not have limitations on smoke development. Furthermore, based on the language in 2603.9, alternative tests could also be permitted, and what those do or do not measure is not known. However, since compliance with NFPA 286 is already required in 2603.7.2, and NFPA 286 and the acceptance criteria in 803.1.2 are also identified in 2603.9, it appears this sentence is redundant.

Cost Impact: Will not increase the cost of construction
The proposal will potentially eliminate redundant testing to additional standards

other than UL 723, ASTM E84, and NFPA 286

Public Hearing Results

Committee Action: Approved as Modified

Modification:

2603.7.2 Approval. The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria of Section 803.1.2 when tested in accordance with NFPA 286. Alternatively, the foam plastic insulation shall
be approved based on tests conducted in accordance with Section 2603.9.

Committee Reason: The committee agrees that compliance with Section 2603.9 should not be mandated as there are other paths to compliance. The modification keeps reference to compliance with Section 2603.9 as an alternative.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Marcelo Hirschler, representing GBH International (gbhint@aol.com) requests Approve as Modified by this Public Comment.

Further Modify as Follows:

2015 International Building Code

2603.7 Foam plastic ~~insulation used~~ in plenums as interior finish or interior trim ~~in plenums~~. Foam plastic ~~insulation~~ in plenums used as interior wall or ceiling finish, or interior trim, shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the maximum thickness and density intended for use, and shall be tested in accordance with NFPA 286 and meet the acceptance criteria of Section 803.1.2. As an alternative to testing to NFPA 286, the foam plastic shall be approved based on tests conducted in accordance with Section 2603.9.

Exceptions:

1. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim ~~in plenums~~ , shall exhibit a flame spread index of 75 or less and a smoke-developed index of

450 or less when tested in accordance with ASTM ~~E 84~~ E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by a thermal barrier complying with Section 2603.4.

2. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim, shall ~~comply~~ exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ~~one~~ ASTM E84 or ~~more~~ UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by corrosion-resistant steel having a base metal thickness of ~~Sections 2603.7.1~~ not less than 0.0160 inch (0.4 mm).
3. Foam plastic in plenums used as interior wall or ceiling finish, ~~2603.7.2~~ or interior trim, shall exhibit a flame spread index of 75 or less and ~~2607.3~~ a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by not less than a 1 inch (25 mm) thickness of masonry or concrete.

~~**2603.7.1 Separation required.** The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.~~

~~**2603.7.2 Approval.** The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria of Section 803.1.2 when tested in accordance with NFPA 286. The foam plastic insulation shall be approved based on tests conducted in accordance with Section 2603.9.~~

~~**2603.7.3 Covering.** The foam plastic insulation shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.~~

2015 International Mechanical Code

602.2.1.6 Foam plastic ~~insulation~~ in plenums as interior finish or interior trim. Foam plastic ~~insulation used~~ in plenums used as interior wall or ceiling finish or interior trim, shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the maximum thickness and density intended for use and shall be tested in accordance with NFPA 286 and meet the acceptance criteria of Section 803.1.2 of the International Building Code. As an alternative to testing to NFPA 286, the foam plastic shall be approved based on tests conducted in accordance with Section 2603.9 of the International Building Code.

Exceptions:

1. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim, shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM ~~E 84~~ E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by a thermal barrier complying with Section 2603.4 of the International Building Code.
2. Foam plastic in plenums used as interior wall or ceiling finish, or interior trim, shall ~~also comply~~ exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ~~one~~ ASTM E84 or ~~more~~ UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by corrosion-resistant steel having a base metal thickness of ~~Sections 602.2.1.6.1~~ not less than 0.0160 inch (0.4 mm).
3. Foam plastic in plenums used as interior wall or ceiling finish, ~~602.2.1.6.2~~ or interior trim, shall exhibit a flame spread index of 75 or less and ~~602.2.1.6.3~~ a smoke-developed index of 450 or less when tested in accordance with ASTM E84 or UL 723 at the maximum thickness and density intended for use, where it is separated from the airflow in the plenum by not less than a 1 inch (25 mm) thickness of masonry or concrete.

~~**602.2.1.6.1 Separation required.** The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 of the *International Building Code* and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.~~

~~**602.2.1.6.2 Approval.** The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria of Section 803.1.2 of the *International Building Code* when tested in accordance with NFPA 286.~~

~~The foam plastic insulation shall be approved based on tests conducted in accordance with Section 2603.9 of the *International Building Code*.~~

~~**602.2.1.6.3 Covering.** The foam plastic insulation shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.~~

Commenter's Reason: During the code cycle that led to the approval of the 2015 IBC and 2015 IMC Agreement was reached that section 2603.7 of the IBC and section 602.2.1.6 of the IMC (via FS 189-12) would have identical language. Unfortunately, proposals were allowed separately to each code section in this cycle. Code proposal M70 was handled by the IMC committee and accepted as modified and it introduced improved language into both IBC 2603.7 and IMC 602.2.1.6, meaning that both would retain identical language. In the same section proposal FS 178 was approved as modified by the IBC FS committee and it introduced some new language into IBC 2603.7 but not into IMC 602.2.1.6. This public comment simply combines both

proposals, as accepted by the technical committees and generates identical language into both code sections. A slight change in language was needed for the added sentence from FS 178 because it needed to clarify that the alternate testing refers only to NFPA 286 testing and does not exclude the foam plastic to having to be tested to ASTM E84 (each with the appropriate criteria).

Public Comment 2:

Proponent : Tim Earl, representing GBH International (tearl@gbhinternational.com) requests Disapprove.

Commenter's Reason: Last cycle, a proposal passed which modified Section 2603.7 to duplicate the language in Section 602.2.1.5 of the IMC. These two sections were not assigned to the same code development committee, so if this proposal passes, it would create a conflict between the IMC and the IBC. Unless this is corrected with a Public Comment to revise Section 602.2.1.5.2, request disapproval.

FS178-15

FS179-15

2603.7.4 (New)

Proposed Change as Submitted

Proponent : Tony Crimi, representing North American Insulation Manufacturers Association (tcrimi@sympatico.ca)

2015 International Building Code

Add new text as follows:

2603.7.4 Building panel systems Foam plastic insulation used as part of a factory assembled panel system shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm). The foamed plastic insulation shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use. The manufactured building panel system shall also conform to the flame spread and smoke-developed requirements of Chapter 8 when tested in accordance with ASTM E 84 or UL 723 at the thickness intended for use, unless special approval is obtained on the basis of Section 2603.9. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

Reason: This proposal introduces clear language for testing of metal faced foamed plastic core sandwich panels. The proposal clarifies that both the foamed plastic insulation and the foam filled panel systems need to be tested. The requirement to test a joint or seam is included for consistency with current laboratory and Certification practices. This portion of the proposal language is taken directly from IBC section 2603.9. The requirements for the foamed plastic core material are identical to 2603.7.3. However, the requirements for the finished panel system would be as required by Chapter 8, depending upon the use of the product.
The IBC has several references to foamed plastic sandwich panels. Typically, sandwich panels are manufactured products. Many use a covering of corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm). However, it is not clear whether the current provision in 2603.7.3 applies to factory assembled panels because the ASTM E84/UL 723 testing requirement only expresses limits for the foam insulation core, not for the composite product.

When sandwich wall or ceiling panels are tested, they do not always yield better flame spread and smoke developed values than the base foam insulation core. For example, higher smoke developed indexes This is demonstrated in numerous UL Listings under their CCN "BLBT" for Surface Burning Characteristics of Building Units. Based on this experience, Laboratories like UL evaluate this effect by testing the sample with a longitudinal butt joint, using a factory or field joint (as applicable).

For building units consisting of an interior core material faced on both surfaces, the UL certification of the product already includes the surface-burning characteristics of the core material in addition to the surface-burning characteristics of the finished product.

Cost Impact: Will not increase the cost of construction

The proposal is consistent with the practices of Laboratories such as UL.

Public Hearing Results

Committee Action: Disapproved

Committee Reason: The committee disapproved this item based on a lack of a definition for building panel systems. Without a definition products may be inadvertently included or excluded from these requirements.

Assembly Action : None

Individual Consideration Agenda

Public Comment 1:

Proponent : Tony Crimi, representing North American Insulation Manufacturers Association (tcrimi@sympatico.ca) requests Approve as Modified by this Public Comment.

Modify as Follows:

2015 International Building Code

~~**2603.7.4**~~ **2603.8** **Factory Assembled Building** ~~**panel systems**~~ **Panels** Foam plastic insulation used as part of a factory assembled panel ~~system~~ shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) , or approved alternative protection. The foamed plastic insulation shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use. The ~~manufactured~~ factory assembled building ~~panel system~~ panels shall also conform to the flame spread and smoke-developed requirements of Chapter 8 when tested in accordance with ASTM E 84 or UL 723 at the thickness intended for use, unless special approval is obtained on the basis of Section 2603.9. ~~Assemblies tested~~ This testing shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

Commenter's Reason: This proposal introduces a new section with clear requirements for testing of foamed plastic core sandwich panels. This public comments clarifies that both the foamed plastic insulation and the foam filled panel systems need to be tested using ASTM E84, UL 723, or one of the approved alternative methods in 2603.9. This proposal consolidates the current requiremnts into one section to simplify enforcement and be consistent with common industry practice.

For example, UL has numerous UL Listings under their CCN "BLBT" for Surface Burning Characteristics of Building Units. The UL category covers building units, consisting of proprietary mixes of organic and/or inorganic materials formed into panels, blocks, boards, planks, slabs, or sheets fabricated into various sizes, thicknesses and shapes, certified as to surface-burning characteristics. This class of products are often reffered to as Sandwich Panels, or Factory-Assembled Building panels. Consequently, a separate definition, is not critical.

Because some building units are provided with facings or are composites of several

materials which may affect the contribution of combustibles under fire conditions. This effect is determined by testing the sample with a longitudinal butt joint, constructed by slitting the facing or by using a factory or field joint (if applicable). Testing has demonstrated that when sandwich wall or ceiling panels are tested, they do not always yield better flame spread and smoke developed values than the base foam insulation core. For example, higher smoke developed indexes are not uncommon. This is demonstrated in numerous UL Listings under their CCN "BLBT". Based on this experience, Laboratories like UL evaluate this effect by testing the sample with a longitudinal butt joint, using a factory or field joint (as applicable). For building units consisting of an interior core material faced on both surfaces, the certification of the product includes the reporting of the surface-burning characteristics of the core material in addition to the surface-burning characteristics of the finished product.

FS179-15