

IBC – FIRE SAFETY

Code Change No: **FS1-07/08**

Original Proposal

Sections: 702.1, 704.8.2, 706.7

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

Revise as follows:

SECTION 702 DEFINITIONS

702.1 Definitions. The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

FIRE PROTECTION RATING. The period of time that an opening protective assembly will maintain the ability to confine a fire as determined by tests prescribed in Section 715. Ratings are stated in hours or minutes.

704.8.2 (Supp) Protected openings. Where openings are required to be protected, fire doors and fire shutters shall comply with Section 715.4 and fire window assemblies shall comply with Section 715.5.

Exception: Opening protective assemblies are not required where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and the exterior openings are protected by a water curtain using automatic sprinklers approved for that use.

706.7(Supp) Openings. Openings in a fire barrier shall be protected in accordance with Section 715. 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 exit enclosures and exit passageways shall also comply with Sections 1020.1.1 and 1021.4, respectively.

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m²) where adjoining floor areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door serving an exit enclosure.
3. Openings shall not be limited to 156 square feet (15 m²) or an aggregate width of 25 percent of the length of the wall where the opening protective assembly 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 length of the wall.

Reason: The changes are proposed for consistency with the use of "opening protective" elsewhere in the 2006 IBC and 2007 IBC Supplement (approximately 40 locations). Those noted above are the only instances of "opening protective assembly" in the 2006 IBC or 2007 IBC Supplement.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this change was necessary for consistency with the use of “opening protective” elsewhere in the 2006 IBC and 2007 IBC Supplement.

Assembly Action:

None

Final Hearing Results

FS1-07/08

AS

Code Change No: **FS2-07/08**

Original Proposal

Sections: [F] 403.2, [F] 415.6.3.5.2, 508.2.5.2, 702.1, 704.9.1, 704.11, 706.5, 707.1, 707.2, 708.4, 709.4, 711.3.1, 711.3.2, 711.6, 712.4, 712.4.1, 712.4.1.2, 713.1.173.4, 714.3, 716.6 (IMC [B] 607.6), 716.6.1 (IMC [B] 607.6.1), 716.6.2 (IMC [B] 607.6.2), 721.6.1, Table 721.6.2(1), [F] 903.2, [F] 903.3.1.1.1, 1207.1, 1207.2, 1207.3, 1502.1, 3410.6.3.2 (IEBC 1301.6.3.2); IFC 703.3, 914.3.1, 1504.3.2.5

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY, THE IBC STRUCTURAL AND THE IFC CODE DEVELOPMENT COMMITTEES AS 3 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES

PART I – IBC FIRE SAFETY

1. Revise as follows:

508.2.5.2 (Supp) Nonfire-resistance rated separation and protection. Where Table 508.2.5 permits an automatic fire extinguishing system without a fire barrier, the incidental accessory occupancies shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The walls shall extend from the top of the foundation or ~~floor/ceiling floor~~ assembly below to the underside of the ceiling that is a component of a fire-resistance-rated floor/ceiling floor assembly above or ~~fire-resistance-rated roof/ceiling roof~~ assembly above or to the underside of the floor or roof sheathing, deck or slab above. Doors shall be self- or automatic closing upon detection of smoke in accordance with Section 715.4.7.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.

SECTION 702 DEFINITIONS

CEILING RADIATION DAMPER. A listed device installed in a ceiling membrane of a fire-resistance-rated ~~floor/ceiling floor assembly~~ or ~~roof/ceiling roof~~ assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening.

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

704.9.1 (Supp) Voids. The void created at the intersection of a ~~floor/ceiling floor~~ assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

704.11 Parapets. Parapets shall be provided on exterior walls of buildings.

Exceptions: A parapet need not be provided on an exterior wall where any of the following conditions exist:

1. The wall is not required to be fire-resistance rated in accordance with Table 602 because of fire separation distance.
2. The building has an area of not more than 1,000 square feet (93 m²) on any floor.
3. Walls that terminate at roofs of not less than 2-hour fire-resistance-rated construction or where the roof, including the deck or slab and supporting construction, is constructed entirely of noncombustible materials.
4. One-hour fire-resistance-rated exterior walls that terminate at the underside of the roof sheathing, deck or slab, provided:
 - 4.1. Where the ~~roof/ceiling~~ roof framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction for a width of 4 feet (1220 mm) for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
 - 4.2. Where ~~roof/ceiling~~ roof framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction.
 - 4.3. Openings in the roof shall not be located within 5 feet (1524 mm) of the 1-hour fire-resistance-rated exterior wall for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
 - 4.4. The entire building shall be provided with not less than a Class B roof covering.
5. In Groups R-2 and R-3 where the entire building is provided with a Class C roof covering, the exterior wall shall be permitted to terminate at the underside of the roof sheathing or deck in Type III, IV and V construction, provided:
 - 5.1. The roof sheathing or deck is constructed of approved noncombustible materials or of fire-retardant-treated wood for a distance of 4 feet (1220 mm); or
 - 5.2. The roof is protected with 0.625-inch (16 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members for a minimum distance of 4 feet (1220 mm).
6. Where the wall is permitted to have at least 25 percent of the exterior wall areas containing unprotected openings based on fire separation distance as determined in accordance with Section 704.8.

706.5 (Supp) Continuity. Fire barriers shall extend from the top of the ~~floor/ceiling~~ floor 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 spaces, such as the space above a suspended ceiling. The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported, except for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB and VB construction. Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 717.2 at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.6.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.
2. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 707.12.

707.1 General. The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through ~~floor/ceiling~~ floor and ~~roof/ceiling~~ roof assemblies. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706 or horizontal assemblies in accordance with Section 711, or both.

707.2 Shaft enclosure required. Openings through a ~~floor/ceiling~~ floor assembly shall be protected by a shaft enclosure complying with this section.

Exceptions:

1. A shaft enclosure is not required for openings totally within an individual residential dwelling unit and connecting four stories or less.
2. A shaft enclosure is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 for an escalator opening or stairway that is not a portion of the means of egress protected according to Item 2.1 or 2.2:
 - 2.1. Where the area of the floor opening between stories does not exceed twice the horizontal projected area of the escalator or stairway and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

- 2.2. Where the opening is protected by approved power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.11 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release there from.
3. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable and vents protected in accordance with Section 712.4.
4. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 712.4. Grease ducts shall be protected in accordance with the *International Mechanical Code*.
5. In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.
6. A shaft enclosure is not required for approved masonry chimneys where annular space protection is provided at each floor level in accordance with Section 717.2.5.
7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening or an air transfer opening that complies with the following:
 - 7.1. Does not connect more than two stories.
 - 7.2. Is not part of the required means of egress system, except as permitted in Section 1020.1.
 - 7.3. Is not concealed within the building construction.
 - 7.4. Is not open to a corridor in Group I and R occupancies.
 - 7.5. Is not open to a corridor on nonsprinklered floors in any occupancy.
 - 7.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
 - 7.7. Is limited to the same smoke compartment.
8. A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.
9. A shaft enclosure is not required for floor openings between a mezzanine and the floor below.
10. A shaft enclosure is not required for joints protected by a fire-resistant joint system in accordance with Section 713.
11. A shaft enclosure shall not be required for floor openings created by unenclosed stairs or ramps in accordance with Exception 8 or 9 in Section 1020.1.
12. Floor openings protected by floor fire doors in accordance with Section 711.8.
13. Where permitted by other sections of this code.
14. Elevators in open parking garages that serve only the parking garage are not required to be enclosed.

708.4 (Supp) Continuity. Fire partitions shall extend from the top of the foundation or ~~floor/ceiling~~ floor assembly below to the underside of the floor or roof sheathing, slab or deck above or to the underside of the ceiling that is a component of a fire-resistance-rated floor/ceiling floor assembly or roof/ceiling roof assembly above, and shall be securely attached thereto. If the partitions are not continuous to the sheathing, deck or slab, and where constructed of combustible construction, the space between the ceiling and the sheathing, deck or slab above shall be fireblocked or draftstopped in accordance with Sections 717.2 and 717.3 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 mall buildings, walls separating dwelling units, sleeping units and corridor walls, in buildings of Types 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 assembly or roof assembly 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 partition separating tenant spaces in a covered mall building, complying with Section 402.7.2, 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. Fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four stories above grade plane, provided the attic space is subdivided by draftstopping into areas not exceeding 3,000 square feet (279 m²) or above every two dwelling units, 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.

709.4 Continuity. Smoke barriers shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or ~~floor/ceiling~~ floor 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. The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exception: Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.

711.3.1 Ceiling panels. Where the weight of lay-in ceiling panels, ~~used as part~~ that are components of fire-resistance-rated ~~floor/ceiling~~ floor assemblies or ~~roof/ceiling~~ roof assemblies, is not adequate to resist an upward force of 1 lb/ft.2 (48 Pa), wire or other approved devices shall be installed above the panels to prevent vertical displacement under such upward force.

711.3.2 (Supp) Access doors. Access doors shall be permitted in ceilings that are components of fire-resistance-rated ~~floor/ceiling~~ floor assemblies and ~~roof/ceiling~~ roof assemblies provided such doors are tested in accordance with ASTM E 119 or UL 263 as horizontal assemblies and labeled by an approved agency for such purpose.

711.6 Joints. Joints made in or between fire-resistance-rated horizontal assemblies shall comply with Section 713. The void created at the intersection of a ~~floor/ceiling~~ floor assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

712.4 (Supp) Horizontal assemblies. Penetrations of a floor, ~~floor/ceiling~~ assembly or the ceiling membrane that is a component of a ~~roof/ceiling~~ roof assembly not required to be enclosed in a shaft by Section 707.2 shall be protected in accordance with Sections 712.4.1 through 712.4.4.

712.4.1 (Supp) Fire-resistance rated assemblies. Penetrations of the fire-resistance rated floor, ~~floor/ceiling~~ assembly or the ceiling membrane that is a component of a ~~roof/ceiling~~ fire-resistance-rated roof assembly shall comply with Sections 712.4.1.1 through 714.4.1.5. Penetrations in horizontal smoke barriers shall also comply with 712.5.

712.4.1.2 (Supp) Membrane penetrations. Penetrations of membranes that are ~~part~~ a component of a fire-resistance-rated horizontal assembly shall comply with Section 712.4.1.1.1 or 712.4.1.1.2. Where ~~floor/ceiling~~ floor assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the annular space is protected either in accordance with Section 712.4.1.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm²) in any 100 square feet (9.3m²) of ceiling area in assemblies tested without penetrations.
2. Ceiling membrane penetrations of maximum 2-hour fire-resistance-rated horizontal assemblies by steel electrical boxes that do not exceed 16 square inches (10 323 mm²) in area, provided the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm²) in any 100 square feet (9.29m²) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed 1/8 inch (3.12 mm).
3. Membrane penetrations by electrical boxes of any size or type, which have been listed as part of an opening protective material system for use in horizontal fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

4. Membrane penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the ceiling membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise.
5. The annular space created by the penetration of a fire sprinkler, provided it is covered by a metal eschutcheon plate.

713.1 (Supp) 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~~ floor 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 or UL 263.

713.4 Exterior curtain wall/floor intersection. Where fire resistance-rated floor ~~or floor/ceiling~~ assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an approved material or system to prevent the interior spread of fire. Such material or systems shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected either to ASTM E 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) or installed as tested in accordance with ASTM E 2307 for the time period at least equal to the fire-resistance rating of the floor assembly. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 704.9.

714.4 (Supp) Column protection. Where columns are required to be fire-resistance rated, the entire column, including its connections to beams or girders, shall be provided individual encasement protection on all sides for the full column length. Where the column extends through a ceiling, the fire resistance rating of the column shall be continuous from the top of the foundation or ~~floor/ceiling~~ floor assembly below through the ceiling space to the top of the column.

716.6 (IMC [B] 607.6) Horizontal assemblies. Penetrations by ducts and air transfer openings of a floor, ~~floor/ceiling~~ assembly or the ceiling membrane of a ~~roof/ceiling~~ roof assembly shall be protected by a shaft enclosure that complies with Section 707 or shall comply with Sections 716.6.1 through 716.6.3.

716.6.1 (IMC [B] 607.6.1) (Supp) Through penetrations. In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated ~~floor/ceiling~~ floor assembly that connects not more than two stories is permitted without shaft enclosure protection, provided a listed fire damper is installed at the floor line or the duct is protected in accordance with Section 712.4. For air transfer openings, see Exception 7 to Section 707.2.

Exception: A duct is permitted to penetrate three floors or less without a fire damper at each floor, provided it meets all of the following requirements:

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel not less than 0.019 inch (0.48 mm) (26 gage) in thickness.
2. The duct shall open into only one dwelling or sleeping unit and the duct system shall be continuous from the unit to the exterior of the building.

3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m²) in any 100 square feet (9.3 m²) of floor area.
4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a listed ceiling radiation damper installed in accordance with Section 716.6.2.1.

716.6.2 (IMC [B] 607.6.2) Membrane penetrations. Ducts and air transfer openings constructed of approved materials in accordance with the *International Mechanical Code* that penetrate the ceiling membrane that is a component of a fire-resistance-rated floor/ceiling floor assembly or roof/ceiling roof assembly shall be protected with one of the following:

1. A shaft enclosure in accordance with Section 707.
2. A listed ceiling radiation damper installed at the ceiling line where a duct penetrates the ceiling that is a component of a fire-resistance-rated floor/ceiling floor assembly or roof/ceiling roof assembly.
3. A listed ceiling radiation damper installed at the ceiling line where a diffuser with no duct attached penetrates the ceiling that is a component of a fire-resistance-rated floor/ceiling floor assembly or roof/ceiling roof assembly.

721.6.1 General. This section contains procedures for calculating the fire-resistance ratings of walls, floor/ceiling floor assemblies and roof/ceiling roof assemblies based in part on the standard method of testing referenced in Section 703.2.

TABLE 721.6.2(1)
TIME ASSIGNED TO WALLBOARD MEMBRANES^{a,b,c,d}

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm.

- a. These values apply only when membranes are installed on framing members which are spaced 16 inches o.c.
- b. Gypsum wallboard installed over framing or furring shall be installed so that all edges are supported, except 5/8-inch Type X gypsum wallboard shall be permitted to be installed horizontally with the horizontal joints staggered 24 inches each side and unsupported but finished.
- c. On wood frame floor/ceiling floor assemblies or roof/ceiling roof assemblies, gypsum board shall be installed with the long dimension perpendicular to framing members and shall have all joints finished.
- d. The membrane on the unexposed side shall not be included in determining the fire resistance of the assembly. When dissimilar membranes are used on a wall assembly, the calculation shall be made from the least fire-resistant (weaker) side.
- e. The time assigned is not a finished rating.

1207.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling floor assemblies between adjacent dwelling units or between dwelling units and adjacent public areas such as halls, corridors, stairs or service areas.

1207.2 Air-borne sound. Walls, partitions and floor/ceiling floor assemblies separating dwelling units from each other or from public or service areas shall have a sound transmission class (STC) of not less than 50 (45 if field tested) for air-borne noise when tested in accordance with ASTM E 90. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill.

1207.3 Structure-borne sound. Floor/ceiling Floor assemblies between dwelling units or between a dwelling unit and a public or service area within the structure shall have an impact insulation class (IIC) rating of not less than 50 (45 if field tested) when tested in accordance with ASTM E 492.

3410.6.3.2 (IEBC 1301.6.3.2) Floor/ceiling Floor construction. A floor/ceiling floor assembly used to create compartments shall conform to Section 711 and shall have a fire-resistance rating of not less than 2 hours.

PART II – IBC STRUCTURAL

Revise definition as follows:

**SECTION 1502
DEFINITIONS**

ROOF ASSEMBLY. A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof deck, vapor retarder, substrate or thermal barrier, insulation, vapor retarder and roof covering.

The definition of “Roof assembly” is limited in application to the provisions of Chapter 15.

PART III – IFC

Revise as follows:

703.3 Ceilings. The hanging and displaying of salable goods and other decorative materials from acoustical ceiling systems that are ~~part~~ component of a fire-resistance-rated ~~floor/ceiling~~ floor assembly or ~~roof/ceiling~~ roof assembly, shall be prohibited.

914.3.1 (IBC [F] 403.2) Automatic sprinkler system. Buildings and structures shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 903.3.5.2.

Exception: An automatic sprinkler system shall not be required in spaces or areas of:

1. Open parking garages in accordance with Section 406.3 of the *International Building Code*.
2. Telecommunication equipment buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire detection system in accordance with Section 907.2 and are separated from the remainder of the building by fire barriers consisting of not less than 1-hour fire-resistance-rated walls and 2-hour fire-resistance-rated ~~floor/ceiling~~ floor assemblies.

903.3.1.1.1 (IBC [F] 903.3.1.1.1) Exempt locations. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when approved by the fire code official.
3. Generator and transformer rooms separated from the remainder of the building by walls and ~~floor/ceiling~~ floor assemblies or ~~roof/ceiling~~ roof assemblies having a fire-resistance rating of not less than 2 hours.
4. Rooms or areas that are of noncombustible construction with wholly noncombustible contents.
5. Fire service access elevator machine rooms and machinery spaces.

1504.3.2.5 Clear space. Spray booths shall be installed so that all parts of the booth are readily accessible for cleaning. A clear space of not less than 3 feet (914 mm) shall be maintained on all sides of the spray booth. This clear space shall be kept free of any storage or combustible construction.

Exceptions:

1. This requirement shall not prohibit locating a spray booth closer than 3 feet (914 mm) to or directly against an interior partition, wall or ~~floor/ceiling~~ floor assembly that has a fire-resistance rating of not less than 1 hour, provided the spray booth can be adequately maintained and cleaned.
2. This requirement shall not prohibit locating a spray booth closer than 3 feet (914 mm) to an exterior wall or a roof assembly, provided the wall or roof is constructed of noncombustible material and the spray booth can be adequately maintained and cleaned.

Reason: The purpose for this proposal is to harmonize the terms used to describe horizontal assemblies, which are fire-resistance-rated by virtue of the definition for “horizontal assembly” in Section 702.1. The terms in question are “floor assembly,” “floor/ceiling assembly,” “roof assembly” and “roof/ceiling assembly.” None are currently defined in the IBC or IFC, except for “roof assembly” (see below), and this proposal does not propose definitions for them. Instead, “floor/ceiling assembly” and “roof/ceiling assembly” are replaced by “floor assembly” and “roof assembly.”

In most cases, the replacements are technically sound. There are certain code provisions, however, that specify requirements for ceilings or ceiling membranes the horizontal assemblies rely on for their fire-resistance-ratings. In many of these cases, the current provisions specify “floor/ceiling assembly” or “roof/ceiling assembly” for the purpose of identifying those horizontal assemblies with such ceilings or ceiling membranes. These terms, however, are typically ineffective in accomplishing this purpose. As stated above, “floor/ceiling assembly” and “roof/ceiling assembly” are not defined by the IBC or IFC. Thus, they have no technical meaning except to the extent that a technical meaning can be derived from the ordinarily accepted meanings of “floor/ceiling” or “roof/ceiling” for which I am unable to find in the dictionaries at my disposal (refer to Section 201.4). “Floor/ceiling” and “roof/ceiling” could be interpreted as meaning “floor or ceiling” and “roof or ceiling,” or “floor and ceiling” and “roof and ceiling,” none of which serve the purpose for which these terms are currently used. These terms are archaic and should be replaced, which this proposal accomplishes.

The problems caused by these terms are not limited to the use of “floor/ceiling assembly” and “roof/ceiling assembly” as noted above. “Floor/ceiling assembly” and “floor assembly” are frequently specified alone, rather than together, in provisions for which there is no apparent reason for favoring one or the other. When “floor/ceiling assembly,” but not “floor assembly,” is specified, are floor assemblies exempt from the requirements but floor/ceiling assemblies are not? What about when “floor assembly,” but not “floor/ceiling assembly” is specified? The situation is similar with “roof/ceiling assembly” and “roof assembly.” The proposal eliminates this uncertainty.

Section 711.1 on horizontal assemblies states that “floor and roof assemblies required to have a fire-resistance-rating shall comply with this section” (i.e., horizontal assemblies). There are no comparable requirements in the IBC, however, for a floor/ceiling assembly or a roof/ceiling assembly. The requirements in Section 711 for horizontal assemblies ensure that fire-resistance-rated floor assemblies and roof assemblies provide fire containment (i.e., compartmentation) between stories by means of the requirements in Section 711 for continuity and the fire-resistance-rated protection of penetrations, joints and other openings. There are exceptions for roof assemblies and the fire-protection-rated protection of certain penetrations and openings (e.g., contained with the cavity of a wall, fire dampers at ducts connecting two stories, etc.), but the overall affect is that horizontal fire containment is achieved when the provisions for horizontal assemblies are met. This can not be said for floor/ceiling and roof/ceiling assemblies when there are no comparable provisions for them in the IBC.

There still remains the issue of those code provisions that specify requirements for ceilings or ceiling membranes the horizontal assemblies rely on for their fire-resistance-ratings. Replacing “floor/ceiling assembly” and “roof/ceiling assembly” with “floor assembly” and “roof assembly” does not solve the problem. This proposal solves the problem in these cases by inserting language specifying the ceilings or ceiling membranes that the horizontal assemblies rely on. This is typically done by specifying the “ceiling (or ceiling membrane) that is a component of a fire-resistance-rated floor assembly or roof assembly.” Refer to IBC Sections 508.2.5.2, 708.4, 711.3.1, 711.3.2, 712.4, 712.4.1, 712.4.1.2 and 716.6.2, and IFC Section 703.3.

Section 1502.1 currently defines “roof assembly” for use in the provisions of Chapter 15. The use of “roof assembly” in this context is clearly distinct from its use elsewhere in the IBC and IFC. The proposal adds clarification to the listing of “roof assembly” in Sections 202 and 1502.1 to make the distinction clear.

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

Public Hearing Results

Errata: FS2-07/08 Part I: Add Section 707.1 and revise the first paragraph of Section 707.2 as follows:

707.1 General. The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through ~~floor/ceiling floor~~ and ~~roof/ceiling roof~~ assemblies. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706 or horizontal assemblies in accordance with Section 711, or both.

707.2 Shaft enclosure required. Openings through a ~~floor/ceiling floor~~ assembly shall be protected by a shaft enclosure complying with this section.

Delete Section 914.3.1 (IBC [F] 403.2) from Part III IFC of the proposed change without substitution:

PART I – IBC FIRE SAFETY

Committee Action:

Disapproved

Committee Reason: The committee felt that these revisions to floor/ceiling and roof/ceiling did not add clarity to the code and could result in two meanings for the term roof, which could result in confusion. Further, the committee felt that changing the terminology would not be cost effective as it would require industry to re-publish product literature with the revised terminology.

Assembly Action:

None

PART II – IBC STRUCTURAL

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the definition of “roof assembly” in Section 1502 is specific to Chapter 15 and this proposal makes that clear.

Assembly Action:

None

PART III – IFC

Committee Action:

Disapproved

Committee Reason: The proposed change is not needed. The correct, commonly accepted terms used in the International Codes are floor/ceiling and roof/ceiling assembly. This will also correlate with the disapproval action taken by the IBC-FS Committee.

Assembly Action:

None

Final Hearing Results

FS2-07/08, Part I	D
FS2-07/08, Part II	AS
FS2-07/08, Part III	D

Code Change No: FS4-07/08

Original Proposal

Section: 702

Proponent: Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IRC B/E CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES

PART I – IBC FIRE SAFETY

Revise definition as follows:

**SECTION 702
DEFINITIONS**

FIREBLOCKING. Building materials or materials approved for use as fireblocking, installed to resist the free passage of flame to other areas of the building through concealed spaces.

PART II – IRC BUILDING/ENERGY

Revise definition as follows:

FIREBLOCKING (Supp). Building materials or materials ~~labeled~~ approved for use as fireblocking, installed to resist the free passage of flame to other areas of the building through concealed spaces.

Reason: (IBC) This proposal is intended to create consistency between the definition and the actual requirements in the code. A companion proposal is being submitted to the IRC to create an identical definition for the building code. Sections 717.2.1 and 712.4.2.2 of the IBC (and other sections, as well as section R602.8) discuss what fireblocking materials are permitted. All fireblocking materials must be approved, either through being in a list or by direct approval by the authority having jurisdiction, but they do not necessarily have to be labeled.

(IRC) This proposal is intended to create consistency between the definition and the actual requirements in the code. A companion proposal is being submitted to the IBC to create an identical definition for the building code. Section R602.8 of the IRC (and sections 717.2.1 and 712.4.2.2 of the IBC and other sections) discuss what fireblocking materials are permitted. All fireblocking materials must be approved, either through being in a list or by direct approval by the authority having jurisdiction, but they do not necessarily have to be labeled.

Cost Impact: (IBC) The code change proposal will not increase the cost of construction.
(IRC) The code change proposal should not increase the cost of construction.

Public Hearing Results

**PART I – IBC FIRE SAFETY
Committee Action:**

Approved as Submitted

Committee Reason: The committee agreed that the definition of fireblocking and the actual requirements in the code for fireblocking needed to be consistent. Further, the committee indicated that the added language was required for proper enforcement. Therefore, this proposed change to add "materials approved for use as fireblocking" to the definition of fireblocking was deemed appropriate.

Assembly Action:

None

**PART II – IRC B/E
Committee Action:**

Approved as Submitted

Committee Reason: This change clarifies that fireblocking only needs to be "Approved" and not "Labeled".

Assembly Action:

None

Final Hearing Results

FS4-07/08, Part I	AS
FS4-07/08, Part II	AS

Code Change No: FS10-07/08

Original Proposal

Section: 703.6

Proponent: Ron Nickson, National Multi Housing Council (NMHC)

Revise as follows:

703.6 Marking and identification. 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. Such identification shall:

1. Be located above any decorative ceiling, in concealed spaces or other approved location;
2. Be repeated at intervals not exceeding 30 feet (914 mm) measured horizontally along the wall or partition;
and
3. Include lettering not less than 0.5 inch (12.7 mm) in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS", or other approved wording.

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

Reason: To provide a reasonable exception for R-2 occupancies. The new section 703.6 would required the marking in a location that is not accessible in the typical apartment building in which the walls and ceilings are covered with either ½" of 5/8" Type C fire rated drywall installed as part of the code required fire rated assembly between dwelling units under the requirements of Section 420. The fire rated walls in these R-2 use areas are also not seldom altered after original construction of the residential building, unlike the potential constant changes in other types of commercial buildings that may provide for inexperienced workmen accessible to workmen that might inadvertently damage damaging the wall and thus create an issue with the ability of the wall to work as designed.

Cost Impact: The code change proposal will not increase the cost of construction. This code change will reduce costs.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that marking or signage identifying fire-resistance rated, or smoke, barriers or partitions within Group R-2 occupancies that do not have a removable ceiling was not necessary. Without this exception the marking or signage in a typical hotel room would be required on all interior walls of the room.

Assembly Action:

None

Final Hearing Results

FS10-07/08

AS

Code Change No: **FS11-07/08**

Original Proposal

Section: 703.6

Proponent: Lawrence G. Perry, AIA, representing Building Owners and Managers Association (BOMA) International

Delete without substitution as follows:

~~**703.6 (Supp) Marking and identification.** 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. Such identification shall:~~

- ~~1. Be located above any decorative ceiling, in concealed spaces or other approved location;~~
- ~~2. Be repeated at intervals not exceeding 30 feet (914 mm) measured horizontally along the wall or partition; and~~
- ~~3. Include lettering not less than 0.5 inch (12.7 mm) in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS", or other approved wording.~~

Reason: This proposal seeks to remove the provision requiring marking of fire rated assemblies that was added by a successful public comment at the Rochester Final Hearings. As approved, this new section will require markings on the following walls:

- Interior and exterior sides of exterior walls (where the walls are required to have a fire-resistance rating).
- All walls separating residential dwelling units from adjacent units or corridors.
- All walls separating hotel guest rooms from adjacent rooms or corridors.

As written, this new section also requires the markings of ceilings, and possibly floors, where these assemblies are part of a smoke barrier.

Some of the testimony on this issue noted that these markings would be hidden behind decorative ceilings, however, the approved language requires these markings at all rated positions, and only provides additional information as to where to locate the markings when decorative ceilings are provided.

Representatives from several jurisdictions last cycle indicated that they already require this; however, the text approved requires markings in far more locations, and in far more visible locations, than other local amendments and enforcement levels.

There is no evidence that providing these markings, will provide any reduction in the problem of trades creating openings and failing to properly seal them. If anything, this change will likely lead to a false sense of protection; someone seeing this marking, and not already understanding the complexity of fire rated assemblies, firestopping products and installation methods, will simply fill the opening with whatever material they have on hand.

BOMA has submitted a separate code change to address the concerns raised by the proponent of this change in a different manner; a proposed revision to IFC section 509.1 (and correlative change to IBC 911.1) would add, for buildings with fire command centers, information regarding the location of these rated wall assemblies to the schematic building plans that are already required to be provided.

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

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The committee agreed that the requirements dealing with marking or signage identifying fire-resistance rated, or smoke, barriers or partitions were appropriate and should remain in the code. These assemblies should be identified for the construction trades to avoid breaching of the assemblies during construction that will occur during alterations, additions or repairs.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 2:

Michael Viera, Willdan, representing Sacramento Valley Association of Building Officials (SVABO) requests Approved as Modified by this public comment.

Replace the proposal with the following:

703.6 (Supp) Marking and Identification. 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. Such identification shall:

1. Be located ~~above any decorative ceiling, in accessible concealed floor, floor-ceiling, or attic spaces or other approved location; and~~
2. Be repeated at intervals not exceeding 30 feet (914mm) measured horizontally along the wall or partition; and
3. Include lettering not less than 0.5 inch (12.7mm) in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS", or other approved wording.

Commenter's Reasons: Concerns were raised at the code hearings in Palm Springs that the code text approved in Rochester was too broad and would require marking of all fire and smoke rated walls, barriers, and partitions, including exterior walls, corridors, etc. We believe the intent of the code was to protect those walls, barriers, and partitions in locations that generally were not visible to the building occupants, where utility piping, wiring, ducts, or other service elements are generally installed. We believe the proposed text clarifies the locations where the identification is necessary.

Final Hearing Results

FS11-07/08

AMPC2

Code Change No: **FS14-07/08**

Original Proposal

Section: 704.2

Proponent: Gary Lampella, City of Redmond, OR, representing Oregon Building Officials Association

Revise as follows:

704.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the ~~floor area~~ exterior wall shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways shall also comply with Sections 1014.5 and 1023.1, respectively. Projections shall not extend beyond the distance determined by the following ~~two~~ three methods, whichever results in the lesser projection:

1. A point one-third the distance from the exterior face of the wall to the lot line where protected openings or a combination of protected and unprotected openings are required in the exterior wall. ~~from an assumed vertical plane located where protected openings are required in accordance with Section 704.8.~~
2. A point one-half the distance from the exterior face of the wall to the lot line where all openings in the exterior wall are permitted to be unprotected or the building is equipped throughout with an automatic sprinkler system installed under the provisions of Section 704.8.2. (Supp)
- ≥ 3. More than 12 inches (305 mm) into areas where openings are prohibited.

Buildings on the same lot and considered as portions of one building in accordance with Section 704.3 are not required to comply with this section.

Reason: The provision for projections in Section 704.2 is language from a legacy code that had definite measurements for when openings were required to be protected and when they were prohibited based on occupancy and construction type. With Section 704.8 and Table 704.8, the absolute measurement that was used in the previous legacy code is no longer present. This makes it very difficult to apply and has created inconsistency in application. There is different terminology between the IBC and the legacy code that does not allow the user to adequately apply this section.

The legacy code said "Projections beyond the exterior wall shall comply with Section 705 and shall not extend beyond:" This was very clear that the projections started at the exterior surface of the exterior wall.

The IBC states, "Cornices, eave overhangs, exterior balconies and similar projections extending beyond the floor area shall conform to the requirements of this section and Section 1406." This is very misleading and confusing. The term floor area is defined in Section 1002 which says the floor area is the "area within the inside perimeter of the exterior walls of the building." Using this definition, projections need to be measured from the inside perimeter of the exterior wall, making everything that is outside of the inside perimeter of the exterior walls a projection, including the exterior wall itself. We understand that the definition of floor area also includes usable space without walls under the horizontal projection of the floor or roof above, but the term "projection" in that definition already indicates that the floor or roof above is a projection. These floors and roofs should already be regulated as projections, not the area of usable space under them. We're not sure how you would have a projection from a space without exterior walls that is already under a projection.

The legacy code also stated that the assumed vertical plane for protection of openings was when they were "first" required to be protected. There was a table that had definite measurements that were constant based upon occupancy and construction type. IBC Table 704.8 does not have a provision where you can definitely apply this assumed vertical plane. Utilizing the provisions of Equation 7-2 in Section 704.8 for a non-sprinklered M occupancy of IIB construction 7 feet from the lot line if the combination of protected and unprotected was less than or equal to 1, there would be some required protected openings in the wall. But looking at the Table 704.8, protected openings could be required at 10 feet from the lot line using the same equation. Does one measure the distance from wall and its location in relation to the lot line or from the point at 10 feet where some protected openings would have been required? Or from some other assumed vertical plane?

The intent of this code change is to set a definite line where one can measure this distance from. Without it, this section of the code will continue to be misapplied and inconsistently enforced. There are widely varying interpretation of how to apply Section 704.2 to Section 704.8, none of which has adequately come close to explaining how these two sections interact with each other.

- The first amendment changes the term "floor area" to "exterior wall" so it's clear where one measures from.
- The second change simply makes it clear that the measurement is taken from the exterior surface of the wall sets the actual wall location as the assumed vertical plane for walls with protected openings or a combination of protected and unprotected openings. It also deletes the reference to Section 704.8, which we contend is a major part of the problem.
- The third change is recognizing walls that are permitted to have all openings unprotected and the benefits of have a fire sprinkler system. It also makes it clear that the measurement is taken from the exterior surface of the wall and sets the location of the wall as the vertical plane. We felt that if all openings could be unprotected or a sprinkler system was installed, a greater projection distance could be allowed. That is not recognized as a factor in the current language of Section 704.2.
- The fourth changes makes it clear that buildings on the same lot and considered as one building are exempt from this section.

It is important to note that although the closer to the lot line the building gets the projections also get closer to the lot line incrementally, the projection decrease in distance in the same manner

Simply stated, you can put a square peg in a round hole. If you really look at the current provisions of Section 704.2 and how to apply it to Section 704.8, it doesn't flow very well, is based on two very different code philosophies and requirements, and is very difficult if not impossible, to determine the assumed imaginary line.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed with the proponent in that this proposal adds clarity to the allowable projections requirements by indicating that the location from which projection measurements are to be taken is from the exterior face of the wall.

Assembly Action:

None

Final Hearing Results

FS14-07/08

AS

Code Change No: FS16-07/08

Original Proposal

Section: 704.5

Proponent: Gregory Lake, Sacramento Metropolitan Fire District, representing California Fire Chief's Association (Cal Chiefs)

Revise as follows:

704.5 Fire-resistance ratings. Exterior walls shall be fire-resistance rated 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 5 feet (1524 mm) 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 5 feet (1524 mm) or less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

Reason: This code change proposal is a follow up to our previous Code Change FS20-06/07 which was recommended for disapproval by the Committee. We submitted a Public Comment for approval for discussion during the ICC Final Action Hearings in Rochester, N.Y. We were successful in overturning the Committee's recommendation for disapproval but failed to achieve the necessary 2/3 majority vote for approval by the narrow margin of 111 to 66. Because of the strong interest expressed by the Class A voting members at the hearings, we decided to resubmit this code change proposal for the Committee's consideration. However, in order to make the code change proposal more acceptable to the Committee, we deleted one of the provisions that required all exterior bearing walls to have the fire resistance rating based on fire exposures to both the exterior face and the interior face. In other words, we revised the previous code change proposal to only increase the fire separation distance from 5 feet to 10 feet for the purpose of requiring such exterior walls within that fire separation distance to have their fire resistance rating determined by the fire exposures conducted on both sides of the wall. Thus, any exterior wall required to have a fire resistance rating which has a fire separation distance of more than 10 feet would only be required to have its fire resistance rating determined by fire exposure from the inside. We believe this to be the more critical element of our original code change in order to better prevent building to building fire spread where buildings are in close proximity to each other.

This code change addresses concerns about the provisions of Section 704.5 that permit the fire resistance rating of an exterior wall with a fire separation distance greater than 5 feet to be determined based on fire exposure only to the inside face of the wall. The concerns are based on the provisions of Section 704.8, item 2, which permit an exterior wall that is not required to have a fire resistance rating to have unlimited unprotected openings. Since Table 602 permits non-fire resistance rated exterior walls in buildings of Types IIB and VB construction in all occupancy groups except H where the fire separation distance is 10 feet or greater, the potential exists for buildings with walls rated from the inside only to be exposed to significant levels of radiant heat. The radiant heat exposure will likely cause walls with combustible components to ignite and burn from the outside, and walls with noncombustible structural components to be reduced in strength. Regardless of the construction of the wall, the degradation caused to the wall may result in collapse and/or fire penetration of the wall by the fire before the time of the required fire-resistance rating has elapsed based on the fire-resistance rating being determined by interior fire exposure only.

To illustrate the impact of the provision of Section 704.5 of concern, assume two buildings of Group S-1 occupancy and Type VB construction are erected on either side of a property line. One building has a fire separation distance of 10 feet. Based on these parameters, Table 602 does not require a fire resistance rating for the exterior wall since it is set back 10 feet. Therefore, unlimited unprotected openings are permitted in the wall. The second building has a fire separation distance of 5.01 feet; therefore, Table 602 requires the exterior wall to have a fire resistance rating of 1 hour and unprotected openings are restricted to 10% of the wall area. However, Section 704.5 indicates that since the wall has a fire separation distance of greater than 5 feet, the fire-resistance rating of the wall only needs to be established for exposure to fire from the inside.

The opening limitations of the IBC, which were originally developed for the BOCA National Building Code (NBC), are intended to limit the radiant heat from a fire in an exposing building so that the radiant heat striking an exposed building does not exceed 12.5 kW/m². It is generally accepted that wood-based products can withstand exposure to this level of radiation in the presence of a pilot flame without igniting. If radiant heat levels exceed this amount, ignition is likely since "pilot flames" in the form of flying brands are likely to be present. Auto-ignition (without a flame present) of wood-based products generally occurs at radiation levels of 35 to 45 kW/m² after exposure for about 20 to 25 seconds.

During the development of the IBC, it was decided that if an exterior wall had no required fire-resistance rating, unlimited unprotected openings would be permitted. Since Table 602 does not require exterior walls of buildings (other than Group H) of Types IIB and VB construction to be fire-resistance rated where the fire separation distance is 10 feet or greater, 100% unprotected openings are permitted. Therefore, fires in these buildings are likely to expose adjacent buildings to considerably more radiant heat than 12.5 kW/m².

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that a building wall with a fire separation distance of 10 feet or less could be exposed to a significant amount of radiant heat causing ignition of combustible components on the exterior wall or a reduction of strength in noncombustible structural elements within the exterior wall. Therefore, requiring a fire-resistance rating of an exterior wall to be from both sides where the wall has a fire separation distance of 10 feet or less is appropriate.

Assembly Action:

None

Final Hearing Results

FS16-07/08

AS

Code Change No: **FS20-07/08**

Original Proposal

Sections: 704.8.6, 711.3.3, 711.4, 721.5.2.3, 410.4, 414.2.4, 509.5, 509.6, 805.1.1, 805.1.2, 909.20.2; IFC 2703.8.3.4

Proponent: Philip Brazil, Reid Middleton, Inc., representing himself

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC GENERAL, THE IBC FIRE SAFETY AND THE IFC CODE DEVELOPMENT COMMITTEES AS 3 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES

PART I – IBC GENERAL

Revise as follows:

410.4 Platform construction. Permanent platforms shall be constructed of materials as required for the type of construction of the building in which the permanent platform is located. Permanent platforms are permitted to be constructed of fire-retardant-treated wood for Type I, II, and IV construction where the platforms are not more than 30 inches (762 mm) above the main floor, and not more than one-third of the room floor area and not more than 3,000 square feet (279m²) in area. Where the space beneath the permanent platform is used for storage or any other purpose other than equipment, wiring or plumbing, the floor ~~construction assembly~~ shall not be less than 1-hour fire-resistance-rated construction. Where the space beneath the permanent platform is used only for equipment, wiring or plumbing, the underside of the permanent platform need not be protected.

414.2.4 Fire-resistance-rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 414.2.2. The floor ~~construction assembly~~ of the control area and the construction supporting the floor of the control area shall have a minimum 2-hour fire-resistance rating.

Exception: The floor ~~construction assembly~~ of the control area and the construction supporting the floor of the control area are allowed to be 1-hour fire-resistance rated in buildings of Type IIA, IIIA and VA construction, provided that both of the following conditions exist:

1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and
2. The building is three stories or less above grade plane.

509.5 Group R-1 and R-2 buildings of Type IIIA construction. The height limitation for buildings of Type IIIA construction in Groups R-1 and R-2 shall be increased to six stories and 75 feet (22 860 mm) where the first-floor ~~construction assembly~~ above the basement has a fire-resistance rating of not less than 3 hours and the floor area is subdivided by 2-hour fire-resistance-rated fire walls into areas of not more than 3,000 square feet (279 m²).

509.6 Group R-1 and R-2 buildings of Type IIA construction. The height limitation for buildings of Type IIA construction in Groups R-1 and R-2 shall be increased to nine stories and 100 feet (30 480 mm) where the building is separated by not less than 50 feet (15 240 mm) from any other building on the lot and from lot lines, the exits are segregated in an area enclosed by a 2-hour fire-resistance-rated fire wall and the first-floor ~~construction assembly~~ has a fire-resistance rating of not less than 1½ hours.

PART II – IBC FIRE SAFETY

Revise as follows:

704.8.6 (Supp) 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 ~~construction 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 704.3 are not required to comply with Section 704.8.6.

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

711.4 (Supp) Continuity. Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 707.2, 712.4, 713 and 1020.1. Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof ~~construction assembly~~ is maintained. Unprotected skylights shall not be permitted in roof ~~construction assemblies~~ required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall protected to afford the required fire-resistance rating of the horizontal assembly supported.

Exception: In buildings of Type IIB, IIIB or VB construction, the construction supporting the horizontal assembly is not required to be fire-resistance-rated at the following:

1. Horizontal assemblies at the separations of incidental uses as specified by Table 508.2, provided the required fire-resistance rating does not exceed 1-hour.
2. Horizontal assemblies at the separations of dwelling units and sleeping units as required by Section 419.3.
3. Horizontal assemblies at smoke barriers constructed in accordance with Section 709.

721.5.2.3 (Supp) Structural steel trusses. The fire resistance of structural steel trusses protected with fire-resistant materials sprayed to each of the individual truss elements shall be permitted to be determined in accordance with this section. The thickness of the fire-resistant material shall be determined in accordance with Section 721.5.1.3. The weight-to-heated-perimeter ratio (W/D) of truss elements that can be simultaneously exposed to fire on all sides shall be determined on the same basis as columns, as specified in Section 721.5.1.1. The weight to-heated-perimeter ratio (W/D) of truss elements that directly support floor or roof ~~construction assembly~~ shall be determined on the same basis as beams and girders, as specified in Section 721.5.2.1.

The fire resistance of structural steel trusses protected with intumescent or mastic fire-resistant coatings shall be determined on the basis of fire-resistance tests in accordance with Section 703.2.

805.1.1 Subfloor construction. Floor sleepers, bucks and nailing blocks shall not be constructed of combustible materials, unless the space between the fire-resistance-rated floor ~~construction assembly~~ and the flooring is either solidly filled with approved noncombustible materials or fireblocked in accordance with Section 717, and provided that such open spaces shall not extend under or through permanent partitions or walls.

805.1.2 Wood finish flooring. Wood finish flooring is permitted to be attached directly to the embedded or fireblocked wood sleepers and shall be permitted where cemented directly to the top surface of approved fire-resistance-rated floor ~~construction assembly~~ or directly to a wood subfloor attached to sleepers as provided for in Section 805.1.1.

909.20.2 Construction. The smokeproof enclosure shall be separated from the remainder of the building by not less than a 2-hour fire barrier without openings other than the required means of egress doors. The vestibule shall be separated from the stairway by not less than a 2-hour fire barrier. The open exterior balcony shall be constructed in accordance with the fire-resistance-rating requirements for floor ~~construction assemblies~~.

PART III – IFC**Revise as follows:**

2703.8.3.4 Fire-resistance rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 2703.8.3.2. The floor ~~construction assembly~~ of the control area and the construction supporting the floor of the control area shall have a minimum 2-hour fire-resistance rating.

Exception: The floor ~~construction~~ assembly of the control area and the construction supporting the floor of the control area is allowed to be 1-hour fire-resistance rated in buildings of Type IIA, IIIA and VA construction, provided that both of the following conditions exist:

1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1; and
2. The building is three stories or less in height.

Reason: Section 711.1 on horizontal assemblies states that “floor and roof assemblies required to have a fire-resistance-rating shall comply with this section” (i.e., horizontal assemblies). There are no comparable requirements in the IBC, however, for floor construction or roof construction. The requirements in Section 711 for horizontal assemblies ensure that fire-resistance-rated floor assemblies and roof assemblies provide fire containment (i.e., compartmentation) between stories by means of the requirements in Section 711 for continuity and the fire-resistance-rated protection of penetrations, joints and other openings. There are exceptions for roof assemblies and the fire-protection-rated protection of certain penetrations and openings (e.g., contained with the cavity of a wall, fire dampers at ducts connecting two stories, etc.), but the overall affect is that horizontal fire containment is achieved when the provisions for horizontal assemblies are met.

Fire-resistance-rated floor construction and roof construction, by virtue of their listings in Table 601 on fire-resistance rating requirements for building elements, provide fire endurance in the same manner that the structural frame, bearing walls and other structural building elements are required to be fire-resistance-rated due to their listings in Table 601. This fire endurance maintains structural integrity during a fire event but it does not provide fire containment in the manner that is provided by fire barriers and horizontal assemblies.

The code sections in this proposal currently specify requirements for fire-resistance-rated floor or roof construction or reference fire-resistance-rated floor or roof construction for related purposes. The intent of these provisions, however, is judged to specify or reference fire-resistance-rated floor assemblies or roof assemblies for the purpose of providing fire containment in addition to the fire endurance provided by being listed in Table 601. The proposal changes floor construction to floor assembly(ies) and roof construction to roof assembly(ies) in the necessary code sections consistent with the judgment that fire containment in addition to fire endurance is intended.

Certain provisions of the IBC apply specifically to the listings in Table 601 and are not affected by this proposal. They are Sections 602.4.3, 1406.3 and 3104.3 (Exception #2).

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

Public Hearing Results

Errata: FS20-07/08, PART II: Revise Sections 711.3.3, 711.4 and 909.20.2 as follows:

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

711.4 (Supp) Continuity. Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 707.2, 712.4, 713 and 1020.1. Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof ~~construction assembly~~ is maintained. Unprotected skylights shall not be permitted in roof ~~construction assemblies~~ required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall protected to afford the required fire-resistance rating of the horizontal assembly supported.

909.20.2 Construction. The smokeproof enclosure shall be separated from the remainder of the building by not less than a 2-hour fire barrier without openings other than the required means of egress doors. The vestibule shall be separated from the stairway by not less than a 2-hour fire barrier. The open exterior balcony shall be constructed in accordance with the fire-resistance-rating requirements for floor ~~construction assemblies~~.

PART I – IBC GENERAL

Committee Action:

Approved as Submitted

Committee Reason: Clarifies that the terms “floor construction” and “roof construction” are intended to mean “floor assembly” and “roof assembly”, respectively. This provides consistency of terms throughout the code.

Assembly Action:

None

PART II – IBC FIRE SAFETY

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the intent of the revised sections is to specify or reference fire-resistance-rated floor assemblies or roof assemblies for the purpose of providing fire containment in addition to the fire endurance provided by being listed in Table 601. The proposal appropriately changes floor construction to floor assembly(ies) and roof construction to roof assembly(ies) in these code sections.

Assembly Action:

None

PART III – IFC

Committee Action:

Approved as Submitted

Committee Reason: The change will provide correct and properly correlated terminology between the IBC and the IFC for fire-resistance-rated floor and roof construction. This action is also consistent with the action taken by the IBC-G and IBC-FS Committees.

Assembly Action:

None

Final Hearing Results

FS20-07/08, Part I	AS
FS20-07/08, Part II	AS
FS20-07/08, Part III	AS

Code Change No: FS22-07/08

Original Proposal

Sections: 705.1.1, 402.7.3, 402.7.3.1, 402.7.3.2 (New), 402.7.3.3 (New)

Proponent: Sarah A. Rice, Schirmer Engineering Corporation

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES

PART I – IBC FIRE SAFETY

Revise as follows:

705.1.1 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 firewall in accordance with Section 705. Party walls shall be constructed without openings and shall create separate buildings.

Exception: Openings in a party wall separating an anchor building and a covered mall building shall be in accordance with Section 402.7.3.1.

PART II – IBC GENERAL

Revise as follows:

402.7.3 Anchor building separation. An anchor building shall be separated from the covered mall building by fire walls or party walls complying with Section 705.

Exception: Anchor buildings of not more than three stories above grade plane that have an occupancy classification the same as that permitted for tenants of the covered mall building shall be separated by 2-hour fire-resistive fire barriers complying with Section 706.

402.7.3.1 Openings between anchor building and mall in Types I and II construction. Except for the separation between Group R-1 sleeping units and the mall, openings ~~between~~ in the wall separating anchor buildings of Type IA, IB, IIA and IIB I or II construction and the mall need not be protected.

402.7.3.2 Openings between anchor building and mall in Types III, IV or V construction. Openings in the wall separating anchor buildings of Type III, IV or V construction and the mall shall be protected in accordance with provisions of Chapter 7 based upon the type of wall.

402.7.3.3 Openings between anchor building and covered mall buildings, other than in the mall. Openings in the wall separating anchor buildings construction and the covered mall building, in other than the mall, shall be protected in accordance with provisions of Chapter 7 based upon the type of wall.

Reason: It is becoming more common for the owner of an anchor building that is attached to a covered mall building to purchase the land upon which it sits. Once this occurs a “lot line” is created between the anchor building and the covered mall building and the fire wall that is constructed is regulated by Section 705.1.1 which prohibits the wall from having any openings.

Without openings the anchor store could not function in concert with the covered mall building as they have historically done so. The revisions proposed seek to coordinate how openings in the walls separating anchor buildings and covered mall buildings are to be addressed.

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Modified

Modify the proposal as follows:

705.1.1 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 firewall in accordance with Section 705. Party walls shall be constructed without openings and shall create separate buildings.

Exception: Openings in a party wall separating an anchor building and a covered mall building shall be in accordance with Section 402.7.3.1.

Committee Reason: 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.

Assembly Action:

None

PART II – IBC GENERAL

Committee Action:

Disapproved

Committee Reason: The definition of covered mall would already address the concern of differing ownership.

Assembly Action:

None

Final Hearing Results

FS22-07/08, Part I	AM
FS22-07/08, Part II	D

Code Change No: FS26-07/08

Original Proposal

Section: 705.4

Proponent: Jerry R. Tepe, FAIA, JRT-AIA Architect, representing American Institute of Architects

Revise as follows:

**TABLE 705.4
FIRE WALL FIRE-RESISTANCE RATINGS**

(Portions of table not shown remain unchanged)

- ~~a. Walls shall be not less than 2-hour fire-resistance-rated where separating buildings of Type II or V construction.~~
- a. In Type II or V construction, walls are permitted to have a 2-hour fire-resistance-rating.
- b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

Reason: Footnote a is confusing and often not understood. Revised wording makes the intent of the footnote clearer.

Cost Impact: The code change proposal will not increase the cost of construction. Correct interpretation of the code will save costs.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed with the proponent that current footnote "a" to Table 705.4 is confusing and often misinterpreted. The revised wording clarifies the footnote by indicated what is permitted rather than a minimum requirement.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Bob Eugene, Underwriters Laboratories Inc., requests Approved as Modified by this public comment.

Modify proposal as follows:

**TABLE 705.4
FIRE WALL FIRE-RESISTANCE RATINGS**

(Portions of table not shown remain unchanged)

- a. In Type II or V construction, walls ~~are~~ shall be permitted to have a 2 hour fire-resistance-rating.
b. For Group H-1, H-2 or H3 buildings, also see Sections 415.4 and 415.5.

Commenter-s Reason: The proposed language above is intended further clarify the meaning of this footnote through the use of mandatory language.

Final Hearing Results

FS26-07/08

AMPC

Code Change No: FS29-07/08

Original Proposal

Section: 705.6

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

Revise as follows:

705.6 (Supp) Vertical continuity. Fire walls shall extend from the foundation to a termination point at least 30 inches (762 mm) above both adjacent roofs.

Exceptions:

1. Stepped buildings in accordance with Section 705.6.1.
2. Two-hour fire-resistance-rated walls shall be permitted to terminate at the underside of the roof sheathing, deck or slab provided:

- 2.1. The lower roof assembly within 4 feet (1220 mm) of the wall has not less than a 1-hour fire-resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour.
- 2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.
- 2.3. Each building shall be provided with not less than a Class B roof covering.
3. Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck, or slabs where both buildings are provided with not less than a Class B roof covering. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.
4. In buildings of Type III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks provided:
 - 4.1. There are no openings in the roof within 4 feet (1220 mm) of the fire wall,
 - 4.2. The roof is covered with a minimum Class B roof covering, and
 - 4.3. The roof sheathing or deck is constructed of fire-retardant-treated wood for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected with 5/8 inch (15.9 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of 2-inch (51 mm) nominal ledgers attached to the sides of the roof framing members for a minimum distance of 4 feet (1220 mm) on both sides of the fire wall.
5. In buildings designed in accordance with Section 509.2, fire walls located above the 3 hour ~~fire-rated~~ horizontal ~~separation assembly~~ required by Section 509.2 item 1 shall be permitted to extend from the top of this horizontal ~~separation assembly~~.

Reason: The changes are proposed for consistency with the changes approved by Proposal G153-06/07-AMPC1. Note that “fire-rated” and “horizontal separation” have no technical meaning and there are no instances of their use in the 2006 IBC. “Fire-resistance rating (rated)” and “fire-protection rating (rated)” are both defined in Section 702.1 and “fire-resistance-rated” would be the technically correct replacement for “fire-rated.” Neither term, however, is necessary because “horizontal assembly” is defined in Section 702.1 as a “fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained.” The technical provisions of Section 711 for horizontal assemblies effectively establish them as fire containment assemblies between stories and other areas.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed with the proponent in that consistency with the changes approved by Proposal G153-06/07 with respect to the terms “fire-rated” and “horizontal separation” was needed. G153-06/07 changed the term from horizontal separation to horizontal assembly and substantiated that all of these assemblies were by definition fire-resistance rated, therefore calling them fire-rated was not necessary in other text locations. These terms are appropriately replaced with “horizontal assembly.”

Assembly Action:

None

Final Hearing Results

FS29-07/08

AS

Code Change No: FS34-07/08

Original Proposal

Section: 706.3.9

Proponent: Gregory R. Keith, Professional heuristic Development, representing The Boeing Company

Revise as follows:

706.3.9. (Supp) ~~Single-occupancy~~ Fire areas. The fire barriers or horizontal assemblies, or both, separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 706.3.9. The fire barriers or horizontal assemblies, or both, separating fire areas of mixed occupancies shall have a fire-resistance rating of not less than the highest value indicated in Table 706.3.9 for the occupancies under consideration.

Reason: Section 901.7 essentially states that when a building is divided by fire areas, that such fire areas be separated by fire barriers having a fire-resistance rating determined in accordance with Section 706.3.9. Section 706.3.9 addresses only the single occupancy design condition. Obviously, fire area provisions apply to mixed occupancy buildings as well. The added second sentence prescribes the logical fire-resistance rating requirements for mixed occupancies. This proposal will increase consistency in the application of fire area provisions by addressing a design condition, about which, the IBC is currently silent.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed with the proponent in that this proposal will increase consistency in the application of fire area provisions by addressing fire area provisions that apply to mixed occupancy buildings, about which, the IBC is currently silent.

Assembly Action:

None

Final Hearing Results

FS34-07/08

AS

Code Change No: FS35-07/08

Original Proposal

Section: 706.5

Proponent: William Clayton, City of Westminster, CO, representing himself

Revise as follows:

706.5 (Supp) Continuity. Fire barriers shall extend from the top of the 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 spaces, such as the space above a suspended ceiling. The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported, ~~except for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB and VB construction.~~ Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 717.2 at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.6.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.
2. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 707.12.
3. Supporting construction for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB, and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

Reason: Section 508.2.2.1 sends the reader to Section 706.5 for the requirements for the fire-resistance rated incidental use area walls. Section 706.5 currently does not read clearly and it includes an exception within the body of the code. I have removed the exception from the body and added it as the 3rd exception. This mirrors the wording in a companion change I have submitted to Section 508.2.2.1, regarding the protection of the floors in the incidental use areas and removes the associated confusion with the current wording. Fires typically do not tend to burn downward and the floor should not be required to be fire-resistance rated unless stipulated for other reasons within the code such as for a horizontal fire barrier between occupancy types. I believe this change will simplify the process and understanding for the code user.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that Section 706.5 currently does not read clearly because it contains an exception within it. Removing the exception from the body and adding it as the 3rd exception is appropriate.

Assembly Action:

None

Final Hearing Results

FS35-07/08

AS

Code Change No: **FS37-07/08**

Original Proposal

Sections: 706.5, 706.5.1 (New)

Proponent: Tony Crimi, AC Consulting Solutions Inc., representing International Firestop Council

Revise as follows:

706.5 (Supp) Continuity. Fire barriers shall extend from the top of the 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 spaces, such as the space above a suspended ceiling. ~~The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported, except for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB and VB construction. Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 717.2 at every floor level.~~

Exceptions:

- ~~1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.6.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.~~
- ~~2. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 707.12.~~

706.5.1 Supporting Construction. The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported, except for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB and VB construction. Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 717.2 at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.6.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.
2. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 707.12.

706.9 Joints. Joints made in or between fire barriers, and joints made at the intersection of fire barriers with underside of the floor or roof sheathing, slab or deck above shall comply with Section 713.

Reason: The purpose of this proposed Code change is to simplify section 706.5 and clarify that the fire-resistant joint installed at the intersection of the top of a rated vertical fire barrier and a horizontal roof, floor, or roof slab is required in order to provide the continuity of fire barriers.

As currently written, the Code requirement mixes three different concepts in section 706.5, and then further complicates the issue by adding an exception for certain incidental use areas, making it difficult to discern the requirements. The existing section mixes the notion of “continuity” with that of establishing the fire resistance rating of the supporting construction. In doing so, it clouds the issue of the required rating for the joint located at the top of the fire barrier wall.

With the revisions introduced into the 2006 IBC to the application of fire barriers, the requirement to provide continuity at the top of fire barrier walls has been made more confusing. The 2003 IBC contained the same language in 706.9 regarding “joints made in or between fire barriers”. However, by limiting the definition of fire barriers to walls, the previous requirement to protect joints at the intersection of vertical fire barriers and horizontal construction has been subverted. The revised definition of a Fire Barrier in 702.1 does make it clear that fire barriers are required to maintain continuity, but section 706 requires clarification.

This proposed change separates the requirements for the continuity of the vertical fire barrier from the requirement for the fire resistance ratings of the supporting construction. The fire-resistant joint located at the intersection of the top of a vertical fire barrier wall and the bottom of a fire resistance rated or non-fire resistance rated horizontal roof assembly, floor assembly, or roof slab is a vertical extension of the fire barrier wall and is therefore required to have a fire resistance rating equal to that of the wall assembly. This issue is distinct from whether or not the supporting construction is required to have a fire resistance rating or not. It is directly analogous to the horizontal condition where the fire resistant joint is considered an extension of the rated horizontal assembly. This principle is historically well established in the model Codes, and is similar to the way in which exterior curtain wall and floor intersections are handled in section 713.4.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this was an appropriate reorganization of Section 706.5 to separate the supporting construction requirements from the continuity requirements as well as to clarify that the fire-resistant joint installed at the intersection of the top of a rated vertical fire barrier and a horizontal roof, floor, or roof slab is required in order to provide the continuity of fire barriers.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Lori Lee Graham, City of Portland, OR, representing self requests Approved as Modified by this public comment.

Modify proposal as follows:

706.5.1 Supporting construction: The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported ~~except for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB and VB construction.~~ Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 717.2 at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.6.2.1 shall be 2 hours, but not less than required by Table 601 for the building construction type.
2. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 707.12.
3. Supporting construction for 1-hour fire barriers required by Table 508.2 in buildings of Type IIB, IIIB, and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: The intent of Public Comment is editorial. The proposed Section 706.5.1 as approved by the committee has 3 exceptions – 2 after the paragraph – 1 in the paragraph. This public comment will simply make them all as listed exceptions.

Final Hearing Results

FS37-07/08

AMPC

Code Change No: **FS38-07/08**

Original Proposal

Section: 707.1

Proponent: Douglas H. Evans, PE, Clark County, NV, representing the Department of Development Services

Revise as follows:

707.1 General. The provisions of this section shall apply to ~~vertical shafts where such shafts are~~ required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706 or horizontal assemblies in accordance with Section 711, or both.

Reason: The revision clarifies that shafts may be installed horizontally, as well as vertically, and removes other unnecessary wording. No change intended to code requirements.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed with the proponent in that the proposal clarifies that shafts may be installed horizontally, as well as vertically.

Assembly Action:

None

Final Hearing Results

FS38-07/08

AS

Code Change No: **FS40-07/08**

Original Proposal

Section: 707.2

Proponent: Lori Lee Graham, City of Portland, OR

Revise as follows:

707.2 (Supp) Shaft enclosure required. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this Section.

Exceptions:

1. through 6. (No change to current text)
7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening or an air transfer opening that complies with the following:
 - 7.1. Does not connect more than two stories.
 - 7.2. Is not part of the required means of egress system, except as permitted in Section 1020.1.
 - 7.3. Is not concealed within the ~~building~~ construction of a wall or a floor/ceiling assembly.
 - 7.4. Is not open to a corridor in Group I and R occupancies.

- 7.5. Is not open to a corridor on nonsprinklered floors in any occupancy.
- 7.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
- 7.7. Is limited to the same smoke compartment.

(Exceptions not shown remain unchanged)

Reason: Item 7.3 of this exception prohibits the use of the exception if the opening is "concealed within the building construction". Interpretation of this item has varied with respect to whether the exception would allow an elevator to connect 2 stories without being in a shaft. The difference in interpretation of what is "concealed within the construction of the building". In most places in the code when something is concealed, it is usually referring to cavities within an assembly or beneath a floor or in an attic. But other places of the code talk about concealed spaces and the reference is to a small closet or storage area.

We believe that it is appropriate to clarify which type of concealed space this exception is addressing. As currently written, it could be interpreted that an elevator would not be allowed to utilize the exception. The concern about limiting this exception to not allow concealed spaces is that if a fire is occurring in the concealed space, it won't be observable. An elevator, even within a unrated hoistway is readily observable, it is not 'concealed' in the construction.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this proposal clarified the term "construction" with respect to exception 7 to Section 707.2. This clarification is required because in some locations in the code concealed refers to cavities within an assembly or beneath a floor or in an attic; however in other portions of the code "concealed spaces" is used in reference to small closet or storage areas.

Assembly Action:

None

Final Hearing Results

FS40-07/08

AS

Code Change No: FS41-07/08

Original Proposal

Section: 707.2

Proponent: Masoud Sabounchi, PE, CBO, Advanced Counseling Engineers, Inc., representing Colorado Chapter ICC

Revise as follows:

707.2 (Supp) Shaft enclosure required. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this Section.

Exceptions:

1. A shaft enclosure is not required for openings totally within an individual residential dwelling unit and connecting four stories or less.
2. A shaft enclosure is not required in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 for an escalator opening or stairway that is not a portion of the means of egress protected according to Item 2.1 or 2.2:
 - 2.1. Where the area of the floor opening between stories does not exceed twice the horizontal projected area of the escalator or stairway and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

- 2.2. Where the opening is protected by approved power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.11 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release there from.
3. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable and vents protected in accordance with Section 712.4.
4. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 712.4. Grease ducts shall be protected in accordance with the *International Mechanical Code*.
5. In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.
6. A shaft enclosure is not required for approved masonry chimneys where annular space protection is provided at each floor level in accordance with Section 717.2.5.
7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening or an air transfer opening that complies with the following:
 - 7.1. Does not connect more than two stories.
 - 7.2. Is not part of the required means of egress system, except as permitted in Section 1020.1.
 - 7.3. Is not concealed within the building construction.
 - 7.4. Is not open to a corridor in Group I and R occupancies.
 - 7.5. Is not open to a corridor on nonsprinklered floors in any occupancy.
 - 7.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
 - 7.7. Is limited to the same smoke compartment.
8. A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.
9. A shaft enclosure is not required for floor openings between a mezzanine and the floor below.
10. A shaft enclosure is not required for joints protected by a fire-resistant joint system in accordance with Section 713.
11. A shaft enclosure shall not be required for floor openings created by unenclosed stairs or ramps in accordance with Exception 8 or 9 in Section 1020.1.
12. Floor openings protected by floor fire doors in accordance with Section 711.8.
13. Where permitted by other sections of this code.
14. Elevator hoistways in open or enclosed parking garages that serve only the parking garage are not required to be of fire resistance rated construction enclosed.
15. In open or enclosed parking garages a shaft enclosure is not required to enclose mechanical exhaust or supply duct systems when such duct system is contained within and serves only the parking garage.

Reason: IBC Section 707.2 Exception 8 does not require a shaft enclosure at automobile ramps in open or enclosed parking garages. Section 716.5.3 exceptions 1.4 and 3 do not require fire or smoke dampers at supply or exhaust ducts of shafts enclosures serving parking garages. Size of openings for exhaust and supply shafts is not limited. Providing a fire resistance shaft enclosure for mechanical exhaust and supply ducts, or the elevator hoistways in garages where ramps are open at all levels does not provide additional protection. This proposal is for elevator and mechanical supply and exhaust enclosures contained within and serving the garage only.

Cost Impact: The code change proposal will not increase the cost of construction. The code change proposal reduces the cost of construction.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed with the proponent. Since Section 707.2 Exception 8 does not require a shaft enclosure at automobile ramps in open or enclosed parking garages, and Section 716.5.3, exceptions 1.4 and 3 do not require fire or smoke dampers at supply or exhaust ducts of shafts enclosures serving parking garages, a fire resistance shaft enclosure for mechanical exhaust and supply ducts, or the elevator hoistways in garages where ramps are open at all levels should not be required.

Assembly Action:

None

Final Hearing Results

FS41-07/08

AS

Code Change No: **FS43-07/08**

Original Proposal

Section: 707.4

Proponent: Douglas H. Evans, PE, Clark County Department of Development Services, NV

Revise as follows:

707.4 Fire-resistance rating. Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours. Shaft enclosures shall meet the requirements of Section 703.2.1.

Reason: This revision clarifies that shafts are intended to be symmetrical assemblies, or are to be assigned the rating of the least fire-resistance rated side. If one follows the code path, this level of protection is already required, but it is not completely clear. This revision does not require the exterior side of shafts on exterior walls to be rated, as both Section 703.2.1 and 707.6 refer to Section 704.5, which regulates exterior walls/shafts based on proximity to property lines. No change is intended to code requirements.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this revision clarifies that shafts are intended to be symmetrical assemblies, or are to be assigned the rating of the least fire-resistance rated side.

Assembly Action:

None

Final Hearing Results

FS43-07/08

AS

Code Change No: **FS49-07/08**

Original Proposal

Section: 707.14.1

Proponent: Gregory Lake, Sacramento Metropolitan Fire District, representing California Fire Chief's Association (Cal Chiefs)

Revise as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each ~~floor story~~ where an elevator shaft enclosure connects more than three stories. The lobby enclosure shall separate the elevator shaft enclosure doors from each ~~floor story~~ by fire partitions ~~equal to the fire-resistance rating of the corridor and the required opening protection.~~ In addition to the requirements in Section 708 for fire partitions, doors protecting openings in the elevator lobby enclosure walls shall also comply with Section 715.4.3 as required for corridor walls and penetrations of the elevator lobby enclosure by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 716.5.4.1. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: The purpose of this code change proposal is to clarify the requirements for the construction of the elevator lobby enclosure when it is required by this section. Currently the code is not entirely clear as to how to apply the construction requirements for elevator lobby enclosures since it requires the elevator lobby enclosures to be “fire partitions equal to the fire resistance rating of the corridor and the required opening protection.” This causes problems especially when the building may be sprinklered and the corridor is not required to have a fire resistance rating by Table 1017.1 or because of one of the Exceptions to Section 1017.1. The condition where the corridor may not have a fire resistance rating because the building is protected with an automatic sprinkler system is currently addressed by Exception 5 which allows the elevator lobby enclosure to be constructed as a smoke partition.

Therefore, we believe the key issue is how the opening protection is to be accomplished for the elevator lobby enclosure when the fire partition has a one hour fire resistance rating as required for corridors in nonsprinklered buildings. We believe it is more clear to provide the specific reference to the Sections that incorporate additional specific protection requirements for door openings and duct and air transfer openings in corridor walls to protect against the passage of smoke which is critical in elevator lobby enclosures. So we provided a specific reference for door opening protectives to Section 715.4.3 Door Assemblies in Corridors and Smoke Barriers which specifies the requirement for smoke leakage testing for smoke and draft control doors as required for corridors. We have also provided a specific reference to Section 716.5.4.1 for Ducts and Air Transfer Openings in the elevator enclosures walls which specifies a requirement for a smoke damper in corridor walls at such openings.

In summary, it is our opinion that this is an editorial change without technical revisions with clarifications to make the application and use of this Section more user friendly and easier to enforce.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor story where an elevator shaft enclosure connects more than three stories. The lobby enclosure shall separate the elevator shaft enclosure doors from each floor story by fire partitions. In addition to the requirements in Section 708 for fire partitions, doors protecting openings in the elevator lobby enclosure walls shall also comply with Section 715.4.3 as required for corridor walls and penetrations of the elevator lobby enclosure by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 716.5.4.1. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

(Portions of proposal not shown remain unchanged)

Committee Reason: The committee agreed with the proponent in that this code change proposal clarifies the requirements for the construction of the elevator lobby enclosure when this section requires it; with respect to doors, ducts and air transfer openings. The modification changed “story” back to “floor” which is consistent with current code terminology.

Assembly Action:

None

Final Hearing Results

FS49-07/08

AM

Code Change No: FS53-07/08

Original Proposal

Section: 707.14.1

Proponent: Gregory Lake, Sacramento Metropolitan Fire District, representing California Fire Chief's Association (Cal Chiefs)

Revise as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. ~~In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed~~ Enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. This exception shall not apply to the following:
 - 4.1. I-2 buildings,
 - 4.2. Group I-3 buildings,
 - 4.3. Buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, and
 - 4.4. Buildings in Seismic Design Category D, E, or F.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: This proposed code change accomplishes two things. First, it reformats this very complicated Exception to make it easier to understand and apply. Second, it provides an additional criterion for when the Exception does not apply for buildings determined to be in seismic design category D, E, or F.

As we have begun to review the code to become more familiar with it so that we can begin to enforce it with our recent adoption to become effective on January 1, 2008, we have struggled with how to interpret and properly apply Exception 4 which actually starts out as a double negative. We believe the reformatting we have proposed clarifies that the Exception is not intended to apply to Group I-2 and Group I-3 buildings, as well as high rise buildings that comply with Section 403. So we do not believe that the proposed reformatting makes any technical changes.

But we also realize that this Section also in essence allows for the omission of elevator lobbies when they would otherwise be required if the buildings are protected throughout with an NFPA 13 or an NFPA 13R automatic sprinkler system. We have serious concerns about the application of that Exception especially in our part of the country where we are subject to rather severe earthquakes. We know that we can expect a loss of water supplies not only to buildings but to fire hydrants as well for extended periods of time, thus rendering the automatic sprinkler system inoperable and denying us adequate water supplies to fight the multiple fires that will occur after a significant seismic event. Since migration through elevator shafts has been well documented, we believe that a sprinkler exception should not be applied to those cases where the building has been determined to be in a seismic design category D, E, or F. These seismic design categories are also similar to those specified in Section 903.3.5.2 Secondary Water Supply. That Section requires an onsite water supply for high rise buildings that are in seismic design categories C, D, E, or F. We have chosen to delete the reference to seismic design category C because it has an impact on some other parts of the country where earthquakes may not be as severe or as frequent as they are in California and other regions of the west coast.

By implementing this code change we will be able to continue to enforce the requirement for elevator lobbies which has been in our legacy code, the ICBO Uniform Building Code (UBC), for many years. Our experience has found that the elevator lobby enclosures do help to minimize the spread of smoke from floor to floor via elevator shafts, thus helping the fire department to do their job much more effectively and to minimize smoke exposure to occupants on floors remote from the fire floor and to minimize property damage and subsequent clean up and removal of residual smoke from the building. We believe this is important to fire and life safety feature which provides basic smoke protection and should not be traded off for an automatic sprinkler system, especially in locations where a significant seismic event could render the sprinkler system totally inoperable. Therefore, we respectfully request the Committee approve this code change proposal.

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

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The committee had a concern with the term “buildings” in Items 4.1 and 4.2; they thought “occupancies” was a better fit. Further, there was no technical justification for not allowing buildings in certain seismic design categories from benefiting from this exception.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Mike Ashley, Alliance for Fire and Smoke Containment and Control (AFSCC) requests Approved as Modified by this public comment.

Modify proposal as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. Enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. This exception shall not apply to the following:
 - 4.1. ~~Group I-2 buildings occupancies.~~
 - 4.2. ~~Group I-3 buildings occupancies, and~~
 - 4.3. Buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, ~~and,~~
 - 4.4. ~~Buildings in Seismic Design Category D, E, or F.~~
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Commenter’s Reason: Based on the revisions proposed by this Public Comment, this code change proposal no longer contains any technical changes to Exception 4 to Section 707.14.1 (Supp) Elevator Lobby. We have deleted Item 4.4 of the Exception which the Committee objected to as not being technically justified regarding buildings in Seismic Design Categories D, E, or F. We’ve also made an editorial revision to the references to the term “buildings” and changed them to “occupancies” in both Items 4.1 and 4.2 of Exception 4 to also respond to the Committee comments on their recommendation for disapproval of this code change. The result is an editorial reformatting of Exception 4 to help clarify its application and interpretation. We believe that this reformatting is superior to the current Exception which is very confusing and subject to varying interpretations as to how it is intended to apply to enclosed elevator lobby requirements. We believe that once this Exception is clarified, then it may be easier to further modify it to address technical issues related to how this Exception should apply in various buildings where automatic sprinkler systems are provided in order to eliminate the requirement for an enclosed elevator lobby.

Final Hearing Results

FS53-07/08

AMPC

Code Change No: **FS56-07/08**

Original Proposal

Section: 707.14.1

Proponent: Gregory Lake, Sacramento Metropolitan Fire District, representing California Fire Chief's Association (Cal Chiefs)

Revise as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. In addition to the requirements in Section 710 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 710.5.2, 710.5.3, and 715.4.7 and duct penetrations of the smoke partitions shall be protected as required for corridors in accordance with Section 716.5.4.1.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: This code change clarifies requirements where smoke partitions are used in lieu of fire partitions to separate the elevator lobby from each floor when the building is equipped with an automatic sprinkler system. Current code language requires additional requirements for door openings in smoke partitions for specific uses in Section 710.5.2 and 710.5.3. However, they only apply where "required elsewhere in the code". There are currently no specific requirements that specify those door components for an effective barrier to limit the spread of smoke from an elevator lobby shaft into a floor when an automatic sprinkler system is installed. Furthermore, Section 710.7 does not require a smoke damper to protect duct penetrations of smoke partitions, although it does require smoke dampers to protect air transfer openings. This code change will incorporate the needed smoke spread protection requirements for these door and duct openings in smoke partitions regardless of the installation of an automatic sprinkler system. We believe these additional protection features for the door openings and duct openings in these elevator lobby enclosure walls constructed of smoke partitions are essential to maintaining the primary function of the enclosures to limit the spread of smoke from floor to floor via the elevator shaft. Even in a sprinklered building we believe it is important that the doors in the smoke partitions be self-closing and latching to prevent smoke migration out of the elevator lobby or into the elevator lobby and to provide a smoke damper for duct openings in order to prevent smoke migration through the duct. Without these additional protection features, significant quantities of smoke may still be able to move throughout the building via the elevator shafts even with the installation of smoke partitions for the elevator lobby enclosures in sprinklered buildings.

It should also be noted that Exception 5 would be allowed to be applied to high rise buildings. For those buildings we believe this additional clarification on openings in smoke partitions is essential since the stack effect will be significantly more prevalent. It has been well documented that the stack effect in high rise buildings can cause significant smoke spread to floors remote from the fire floor via the elevator shafts where the elevator hoist way doors are so loose fitting that smoke can pass around their edges and migrate into the elevator shaft and then out again on floors remote from the fire floor. For these additional protection features for the doors and ducts penetrating these smoke partitions we believe the costs associated with them are insignificant compared to the benefit provided.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this code change will incorporate the needed smoke spread protection requirements for door and duct openings in smoke partitions that are allowed as a replacement for fire partitions as elevator lobby enclosures in accordance with exception #5 to Section 707.14.1.

Assembly Action:

None

Final Hearing Results

FS56-07/08

AS

Code Change No: **FS58-07/08**

Original Proposal

Section: 707.14.1

Proponent: John Berry, Cole + Russell Architects, Inc.

Revise as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.
7. Enclosed elevator lobbies are not required in open parking garages in accordance with Section 406.3

Reason: The current code language requires elevator lobbies to be provided, where applicable, in open parking garages. Considering that the primary purpose of an elevator lobby is to inhibit the spread of smoke via the elevator hoistway, it is impractical to require an elevator lobby in an open structure that will allow smoke to dissipate outside of the building.

Although elevator lobbies are different from areas of refuge, they are similar. It is appropriate to consider that Section 1007.4 excludes elevators from being accessed from an area of refuge in an open parking garage.

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

Public Hearing Results

Committee Action:**Approved as Modified****Modify the proposal as follows:**

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal
4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.
7. Enclosed elevator lobbies are not required ~~in~~ where the elevator serves only open parking garages in accordance with Section 406.3.

Committee Reason: The committee agreed that since the primary purpose of an elevator lobby is to inhibit the spread of smoke via the elevator hoistway, it is impractical to require an elevator lobby in an open structure that will allow smoke to dissipate outside of the building. Further, the modification makes it clear that the exception is limited to elevators that serve only an open parking garage.

Assembly Action:**None**

Final Hearing Results

FS58-07/08

AM

Code Change No: FS60-07/08

Original Proposal

Sections: 707.14.1, 707.14.1.1 (New)

Proponent: Maureen Traxler, City of Seattle, WA, representing Washington Association of Building Officials Technical Code Development Committee

Add new text as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.

4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

707.14.1.1 Areas of refuge. Areas of refuge shall be provided as required in Section 1007.

Reason: This proposal clarifies that, regardless of Section 707.14's exceptions for elevator lobbies, areas of refuge are governed by Section 1007. This clarification is needed because lobbies have significant consequences for building design. If, as frequently happens, the designer mistakenly interprets Section 707.14 as eliminating all requirements for lobbies at elevators, it is extremely difficult to add them to the building design later.

Cost Impact: This code change proposal will not increase the cost of construction.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this proposal clarifies that, although Section 707.14 deals with elevator lobbies and the exceptions for elevator lobbies, areas of refuge are governed by Section 1007, both of which may affect building design.

Assembly Action:

None

Final Hearing Results

FS60-07/08

AS

Code Change No: FS67-07/08

Original Proposal

Sections: 707.14.1, 707.14.2, 707.14.2.1, 909.21 (New)

Proponent: Maureen Traxler, City of Seattle, WA, representing Department of Planning & Development; John H. Klote, John H. Klote, Inc.; Douglas H. Evans, Clark County, NV, representing Department of Development Services; Assistant Chief Kenneth L. Tipler, Fire Marshall, City of Seattle, WA, representing Seattle Fire Department

1. Revise as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.

4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2 909.21.

2. Delete without substitution:

~~**707.14.2 Enclosed elevator lobby pressurization alternative.** Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with this section.~~

~~**707.14.2.1 Pressurization requirements.** Elevator hoistways shall be pressurized to maintain a minimum positive pressure of 0.04 inches of water column (1.0 Pa) and a maximum positive pressure of 0.06 inches of water column (1.49 Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all ground floor level hoistway doors open and all other hoistway doors closed. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet.~~

3. Add new text as follows:

909.21 Elevator shaft pressurization. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies as allowed by 707.14.1 exception 6, the pressurization system shall maintain a minimum positive pressure of 0.10 inches of water (25 Pa) and a maximum positive pressure of 0.35 inches of water (87 Pa) in the elevator hoistway relative to the building measured with all elevator doors closed under maximum anticipated conditions of stack effect and wind effect.

Reason: This proposal has two objectives—it relocates the provisions for elevator hoistway pressurization to Section 909, and it changes the required pressure difference to a range of 0.10 to 0.35 instead of the current range of 0.04 to 0.06. The purpose of the proposal is to establish criteria for pressurization systems that will control smoke under actual fire conditions.

Elevator pressurization is a smoke control system in that it is intended to control the movement of smoke. The proposed change moves elevator pressurization to Section 909 so that it is subject to the requirements of Section 909 like other smoke control systems including stairway pressurization. These requirements include rational analysis, equipment, electrical power systems, detection, control, fire-fighter's smoke control panel, special inspection and testing. It provides consistency with the requirements for stairway pressurization. Consistency is important because, in buildings that have both elevator and stair pressurization, the systems will interact with each other, making proper design analysis per Section 909.4 especially important.

Currently IBC Section 707.14.2.1 specifies a minimum pressure difference of 0.04 inches of water and a maximum pressure difference of 0.06 inches of water. There are two problems with these values. First, 0.04 inches of water is not enough to reliably keep smoke out of the hoistway. It could provide some protection from smoke migration, but will not control it during a fully-involved fire. A pressure difference of 0.10 inches of water is sufficient to prevent smoke from infiltrating elevator hoistways under the extreme condition of a fully-involved fire in the space next to the elevator door. This is supported by both engineering analysis and full scale fire tests (see NFPA 92A 2006; Klote and Milke 2002).

While at NIST, Dr. John Klote did a series of full-scale fire tests at the Plaza Hotel Building in Washington, D.C. In these fires, the section of a corridor near the stairs was fully involved in fire. In these tests, a pressure difference of 0.10 inches controlled smoke from very large fires that were only a few feet away from the stairway door. Another test consisted of a room fire that flashed over and remained at fully-developed conditions for some time. A number of other full scale tests have confirmed that pressurization can control smoke from extremely large fires. These tests show that 0.10 inches of water is sufficient to control smoke with a flashed-over fire anywhere on the floor even when it is in the corridor next to the stair door.

The second problem with the current provisions is that the pressure difference range of only 0.02 inches of water is too small. Normal fluctuations in pressure due to changes in wind and barometric pressure are about 0.01 to 0.03 inches of water. While it may be possible to design an elevator shaft pressurization system that would work with a range this small for a very short and simple building, it is not possible to design systems that would work for most buildings. Because of stack effect and floor-to-floor variations in building leakage, hoistway pressurization systems in most buildings will naturally require a much larger pressure difference range.

This proposal and a related one would require the same pressure difference for both stairs and elevators (minimum of 0.10 inches of water and maximum of 0.35 inches of water). Many buildings will have both pressurized stairs and elevators, and having the same design pressure differences will make design much simpler and the systems more reliable.

Some people have concerns about elevator doors jamming during hoistway pressurization. Increased pressure difference can sometimes cause elevator doors to jam closed, but such jammed doors typically require only modest force to open. They are not difficult to open by trained and properly-equipped firefighters. John Klote has conducted extensive research with elevator smoke control systems, and he has encountered only one instance of elevator doors jammed closed. In that case the doors were easily opened by hand. In fire situations, the elevators are required to go into Phase II operation which is sometimes called firefighter's service. The elevators are only used by firefighters who are equipped with various tools and capable of opening a door that has been jammed shut.

The intent of smoke control systems as stated in Section 909.1 is "to provide a tenable environment for the evacuation or relocation of occupants." Hoistway pressurization acts to prevent smoke from flowing through elevator hoistways and going to floors remote from the fire, helping to provide a tenable environment for the evacuation or relocation of occupants on floors remote from the fire. The changes made in this proposal are essential for design of hoistway pressurization systems that will be effective in controlling smoke.

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

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: Doors opening at recall should be a part of the pressurization design. Reference to Chapter 9 in exception 6 to Section 707.14.1 could lead to misapplication of the code provisions because the smoke control provisions are not intended to apply to pressurization design. Lastly, Sections 707.14.2.2 through 707.14.2.5 would remain and would need to somehow be coordinated perhaps within Section 909.21.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Maureen Traxler, City of Seattle, WA, representing Department of Planning & Development; John H. Klote, John H. Klote, Inc.; Douglas H. Evans, Clark County, NV, representing Department of Development Services; Assistant Chief Kenneth L. Tipler, Fire Marshall, City of Seattle, WA, representing Seattle Fire Department, requests Approved as Modified by this public comment.

Replace proposal as follows:

707.14.2 Enclosed elevator lobby pressurization alternative. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with this section.

707.14.2.1 Pressurization requirements. Elevator hoistways shall be pressurized to maintain a minimum positive pressure of ~~0.04~~ 0.10 inches of water (~~9.96-25~~ Pa) and a maximum positive pressure of ~~0.06~~ 0.25 inches of water (~~14.94-67~~ Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all elevator cars at the floor of recall and all hoistway doors on the floor of recall open and all other hoistway doors closed. The opening and closing of hoistway doors at each level must be demonstrated during this test. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet.

707.14.2.2 Rational analysis. A rational analysis complying with Section 909.4 shall be submitted with the construction documents.

(Renumber subsequent sections.)

707.14.2.6 Marking and identification. Detection and control systems shall be marked in accordance with Section 909.14.

707.14.2.7 Control diagrams. Control diagrams shall be provided in accordance with Section 909.15.

707.14.2.8 Control panel. A control panel complying with Section 909.16 shall be provided.

707.14.2.9 System response time. Hoistway pressurization systems shall comply with the requirements for smoke control system response time in Section 909.17.

Commenter-s Reason: The IBC allows hoistway pressurization as an alternative to elevator lobbies. However, the current pressurization provisions do not provide a degree of safety comparable to elevator lobbies. The pressure differences of 0.04 to 0.06 inches allowed by the current code are not adequate to keep smoke from migrating through hoistways. The proposed minimum pressurization value of 0.10 is derived from the long experience of John Klote and the City of Seattle's practical experience with enforcing similar provisions. Research, engineering calculation and field observation, including full-scale fire tests, conducted by Dr. John Klote noted in the reason statement for the original proposal, all support 0.10 as the appropriate value for hoistway pressurization.

The maximum of 0.25 inches is based on Seattle's elevator inspection staff observations that pressure differences greater than 0.25 can cause difficulty in operation of elevator doors. Seattle has had hoistway pressurization provisions since 1977.

The rational design analysis per Section 909.4 is an important part of this proposal. It will require the design engineer to take into account the unique characteristics of the building, including location and number of elevators and hoistways, the size and configuration of the building, and other factors that will influence the behavior of the building during fire conditions.

The Code Development Committee's reasons for disapproving this proposal are all addressed in this comment. Hoistway pressurization requirements remain in Section 707.14, removing all ambiguity about which parts of Section 909 apply. All portions of Section 707.14.2 are retained, and the specific pertinent portions of Section 909 are referenced from that section. By retaining Section 707.14.2.1, it is clear that elevator doors are required to be open at the recall level when the pressurization level is measured.

Final Hearing Results

FS67-07/08

AMPC

Code Change No: FS68-07/08

Original Proposal

Section: 707.14.2.5

Proponent: Jonathan Siu, City of Seattle, WA, representing Washington Association of Building Officials Technical Code Development Committee

Revise as follows:

707.14.2.5 Activation of pressurization system. The elevator pressurization system shall be activated upon activation of the building fire alarm system or upon activation of the elevator lobby smoke detectors. Where both a building fire alarm system and elevator lobby smoke detectors are present, each shall be independently capable of activating the pressurization system.

Reason: The purpose of this proposal is to clarify the code requirement for how the elevator pressurization system is activated. The current language in the code appears to allow the designer to choose to activate the hoistway pressurization system with either the fire alarm system or the lobby smoke detectors, even if both are present. In other words, the designer could choose to use just the fire alarm system to trigger the pressurization system, and not hook the lobby smoke detector up to the pressurization system at all, or vice versa. We do not believe this is the intent of the code. Whether the fire is a hot fire away from the hoistway that triggers the fire alarm via sprinkler system activation or a smoky fire near the elevator lobby, the pressurization system should be activated as soon as possible in order to be effective at preventing the spread of smoke from floor to floor through the elevator hoistway. If only one system is capable of activating the hoistway pressurization, there could be a delay in providing that protection from smoke.

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

Public Hearing Results

Committee Action:
Approved as Submitted

Committee Reason: The committee agreed that this proposal clarifies the code requirement for how the elevator pressurization system is activated. If both a fire alarm system and elevator lobby smoke detectors are provided, but only one is capable of activating the hoistway pressurization, there could be a delay in providing that protection from smoke.

Assembly Action:
None

Final Hearing Results

FS68-07/08
AS

Code Change No: FS69-07/08

Original Proposal

Section: 707.14.2.6 (New)

Proponent: Gregory J. Cahanin, Cahanin Fire & Code Consulting, representing Smoke Safety Council

Add new text as follows:

707.14.2.6 Special inspection. Special inspection for performance shall be required in accordance with Section 909.18.8. System acceptance shall be in accordance with Section 909.19.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Reason: The enclosed elevator lobby pressurization alternative does not have a clear link to inspection and performance of the pressurization system once installed. These new referenced requirements of Section 909, Smoke Control clearly establish acceptance testing responsibility and performance. The current 707.14.2.1 measurement requirements don't clearly establish who will acknowledge that the pressurization system meets the performance requirements established in 707.14.2.

In the 2006 IBC Commentary on 909.18.8 it is simply and accurately stated, "Smoke control systems require special inspection since they tend to be unique and complex life safety systems." Special inspections established in 909.18.8.1 are a key to insuring that at key stages the elevator shaft pressurization system meets design criteria. The IBC commentary states that the first round of special inspections occur before concealment of ductwork or fire protection elements and then second round that will result in a certificate of occupancy for the building. Inspections include the verification of pressure differences required in 707.14.2 in addition to the interconnection to the fire alarm and detection systems.

The new 909 references will insure that the proper professional trades are involved in the not only the design process, but the acceptance testing of these complex mechanical systems as well.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: Requiring special inspection for an elevator hoistway pressurization system is consistent with requirements for smoke control systems elsewhere in the code and is appropriate.

Assembly Action:

None

Final Hearing Results

FS69-07/08

AS

Code Change No: FS75-07/08

Original Proposal

Section: 709.5

Proponent: Tom Lariviere, Madison Fire Department, representing Joint Fire Service Review Committee

Revise as follows:

709.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section 715.

Exceptions:

1. In Group I-2, where doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances, and shall not have undercuts, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and shall be automatic closing by smoke detection in accordance with Section 715.4.7.3. Positive-latching devices are not required.
2. In Group I-2, horizontal sliding doors installed in accordance with section 1008.1.3.3 and protected in accordance with Section 715.

Reason: Horizontal sliding doors meeting those provisions of section 1008.1.3.3 and 715 are acceptable components in a means of egress. Current language prohibits the use of these doors. This proposal will provide consistency and correlation with the other sections of the IBC.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that horizontal sliding doors meeting the provisions of section 1008.1.3.3 and 715 should be acceptable components in a means of egress.

Assembly Action:

None

Final Hearing Results

FS75-07/08

AS

Code Change No: FS76-07/08

Original Proposal

Section: 709.5

Proponent: John Woestman, The Kellen Company, representing Door Safety Council

Revise as follows:

709.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section 715.

Exception: In Group I-2, where doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances, and shall not have undercuts in excess of 3/4", louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and shall be automatic closing by smoke detection in accordance with Section 715.4.7.3. Where permitted by the door manufacturer's listing, ~~Positive-latching devices are not required.~~

710.5.2 Smoke and draft control doors. Where required elsewhere in the code, doors in smoke partitions shall be tested in accordance with UL 1784, ~~with an artificial bottom seal installed across the full width of the bottom of the door assembly during the test.~~ The air leakage rate of the door assembly shall not exceed 3 cubic feet per minute per square foot [ft³/(min ft²)](0.015424 m³/s m²) of door opening at 0.10 inch (24.9Pa) of water for both the ambient temperature test and the elevated temperature exposure test.

Reason: All doors have undercuts of some nominal dimension in order to permit operation. This proposal defines a maximum dimension, in compliance with that specified by NFPA 80 – Standard for Fire Doors and Other Opening Protectives – 2007 Edition.

Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in smoke barrier walls must be tested in accordance with NFPA 252 or UL 10C. These test protocols include requirements for positive latching of the test specimens. As proposed in the second revision, the new language would permit the omission of latching hardware where the door manufacturer's listing includes such applications.

The third revision in this proposal recommends deleting text that is redundant to the language of UL 1784, which requires the application of a bottom seal in order to conduct the test.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

710.5.2 Smoke and draft control doors. Where required elsewhere in the code, doors in smoke partitions shall be tested in accordance with UL 1784: ~~with an artificial bottom seal installed across the full width of the bottom of the door assembly during the test.~~ The air leakage rate of the door assembly shall not exceed 3 cubic feet per minute per square foot [ft³/(min ft²)](0.015424 m³/s m²) of door opening at 0.10 inch (24.9Pa) of water for both the ambient temperature test and the elevated temperature exposure test.

Committee Reason: The committee indicated that the undercut tolerance of 3/4 inch for corridor doors in Group I-2 was appropriate and was useful for, and easily verified by, the code official. Also, the committee agreed that it is appropriate to permit the omission of latching hardware where the door manufacturer's listing includes such applications. The modification put the language regarding the artificial bottom seal back into Section 710.5.2 based on the proponent's request; this resulted in no technical changes to Section 710.5.2.

Assembly Action:

None

Final Hearing Results

FS76-07/08

AM

Code Change No: **FS77-07/08**

Original Proposal

Section: 710.5.2

Proponent: Bob Eugene, Underwriters Laboratories Inc.

Revise as follows:

710.5.2 Smoke and draft control doors. Where required elsewhere in the code, doors in smoke partitions shall ~~be~~ meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784 ~~with an artificial bottom seal installed across the full width of the bottom of the door assembly during the test.~~ The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot [~~ft³/(min ft²)~~] (0.015424 m³/(s m²)) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature test and the elevated temperature exposure test. Installation of smoke doors shall be in accordance with NFPA 105.

Reason: The requirements for smoke and draft control doors are covered in Sections 707.14.1, 710.5.2 and 715.4.3.1 of the International Building Code (IBC). These three sections use somewhat different language. As such, the intent of this proposal is to harmonize the language of Section 710.5.2 with the language of Section 715.4.3.1 recently Approved under FS106-06/07, to the extent appropriate. A separate proposal was submitted for Section 707.14.1.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the removal of the requirement for the artificial bottom seal for smoke and draft control doors clarified a long debated issue. Further the proposal coordinates the language of Section 710.5.2 with the language of Section 715.4.3.1 approved under FS106-06/07. Lastly, reference to NFPA 105 for installation of smoke doors is appropriate.

Assembly Action:

None

Final Hearing Results

FS77-07/08

AS

Code Change No: **FS80-07/08**

Original Proposal

Sections: 711.5, 711.6, 712.4.1.2, 902.1 (IFC [B] 902.1)

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

Revise as follows:

711.5 Penetrations. Penetrations of ~~fire-resistance-rated~~ horizontal assemblies shall comply with Section 712.

711.6 Joints. Joints made in or between ~~fire-resistance-rated~~ horizontal assemblies shall comply with Section 713. 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.

712.4.1.2 (Supp) Membrane penetrations. Penetrations of membranes that are part of a ~~fire-resistance-rated~~ horizontal assembly shall comply with Section 712.4.1.1.1 or 712.4.1.1.2. Where floor/ceiling assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the annular space is protected either in accordance with Section 712.4.1.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm²) in any 100 square feet (9.3m²) of ceiling area in assemblies tested without penetrations.
2. Ceiling membrane penetrations of maximum 2-hour ~~fire-resistance-rated~~ horizontal assemblies by steel electrical boxes that do not exceed 16 square inches (10 323 mm²) in area, provided the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm²) in any 100 square feet (9.29m²) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed 1/8 inch (3.12 mm).
3. Membrane penetrations by electrical boxes of any size or type, which have been listed as part of an opening protective material system for use in horizontal ~~fire-resistance-rated~~ assemblies and are installed in accordance with the instructions included in the listing.
4. Membrane penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the ceiling membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise.
5. The annular space created by the penetration of a fire sprinkler, provided it is covered by a metal eschutcheon plate.

SECTION 902 DEFINITIONS

902.1 (Supp) (IFC [B] 902.1) Definitions. The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

FIRE AREA. The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or ~~fire-resistance-rated~~ horizontal assemblies of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal projection of the roof or floor above.

Reason: The changes are proposed for consistency with the definition of "horizontal assembly" in Section 702.1, which is a "fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained." The changes will eliminate superfluous language. The code sections above contain the only instances of "fire-resistance-rated" preceding "horizontal assembly(ies)" in the IBC.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the proposed revisions were appropriate for consistency with the definition of “horizontal assembly” in Section 702.1, which is a “fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained.”

Assembly Action:

None

Final Hearing Results

FS80-07/08

AS

Code Change No: **FS81-07/08**

Original Proposal

Sections: 711.9 (New), 407.4.3 (New)

Proponent: Rick Thornberry, PE, The Code Consortium, Inc., representing Alliance for Fire and Smoke Containment and Control (AFSCC)

PART I – IBC FIRE SAFETY

Add new text as follows:

711.9 Smoke barrier. Where horizontal assemblies are required to resist the movement of smoke by other sections of this code in accordance with the definition for smoke barrier, penetrations and joints in such horizontal assemblies shall be protected as required for smoke barriers in accordance with Sections 712.5 and 713.6. Doors located in elevators shaft enclosures that penetrate the horizontal assembly shall be protected by enclosed elevator lobbies complying with Section 707.14.1. Horizontal assemblies shall not be allowed to have unprotected vertical openings. Openings through a horizontal assembly shall be protected as required by Section 707.

PART II – IBC GENERAL

Add new text as follows:

407.4.3 Horizontal assemblies. Horizontal assemblies supporting smoke barriers required by this section shall be designed to resist the movement of smoke and shall comply with Section 711.9.

Reason: This code change proposal is intended to clarify the requirements for horizontal assemblies that are used to support smoke barrier walls such as in Group I-2 occupancies where smoke barriers are required to subdivide floors by Section 407.4. It is clear from the definition for “smoke barrier” that a smoke barrier can be a horizontal assembly. Furthermore, in order to provide for the continuity of the smoke protection for smoke compartments created by vertical smoke barriers to provide for relative safe areas for horizontal movement of patients in a fire emergency, it follows that the floors supporting those smoke barrier walls should also be able to resist the passage or movement of smoke through the assembly to maintain the appropriate level of protection for the occupants. Generally, occupants of Group I-2 occupancies are moved into a smoke barrier that is away from the area where the fire occurred so that they can remain until further moved as necessary or until the fire has been extinguished by the responding fire department. The provisions contained in this code change proposal we believe will provide the equivalent level of smoke protection to that of the smoke barrier for the horizontal assemblies that support the smoke barriers.

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Disapproved

Committee Reason: The committee felt that sending the code-user to Sections 707.14.1 and 707 would be confusing because it is not clear what provisions in Section 707 are applicable to horizontal assemblies that are required to resist the movement of smoke.

Assembly Action:

None

PART II – IBC GENERAL

Committee Action:

Disapproved

Committee Reason: The proposed revisions would not work without the proposed requirements in Part I of the proposal. Part I was heard by the Fire Safety Committee later during the hearings.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Mike Ashley, Alliance for Fire and Smoke Containment and Control (AFSCC) requests Approved as Modified by this public comment for Part I.

Modify proposal as follows:

711.9 Smoke barrier. Where horizontal assemblies are required to resist the movement of smoke by other sections of this code in accordance with the definition for smoke barrier, penetrations and joints in such horizontal assemblies shall be protected as required for smoke barriers in accordance with Sections 712.5 and 713.6. ~~Regardless of the number of stories connected by elevator shaft enclosures,~~ doors located in elevator shaft enclosures that penetrate the horizontal assembly shall be protected by enclosed elevator lobbies complying with Section 707.14.1. ~~Openings through horizontal assemblies shall be protected by shaft enclosures complying with Section 707.~~ Horizontal assemblies shall not be allowed to have unprotected vertical openings. ~~Openings through a horizontal assembly shall be protected as required by Section 707.~~

Commenter's Reason: We are requesting approval of this code change proposal as modified by this Public Comment. It provides appropriate code requirements for horizontal assemblies used to support smoke barriers required in Group I-2 occupancies. Currently, the code does not contain specific requirements for these horizontal assemblies which act as smoke barriers based on the definition for "smoke barriers" in Section 702.1. This will provide clear guidance to designers of Group I-2 occupancies, as well as to code enforcement officials responsible for assuring such occupancies comply with the code for the protection the occupants from smoke.

We believe the revisions proposed in this Public Comment respond to the Fire Safety Committee's reasons for recommending disapproval of Part I of this code change proposal which was critical to its proper application. We have revised the reference to Section 707 by specifying that we are requiring shaft enclosures to protect the openings in horizontal assemblies in accordance with the provisions for shaft enclosures in Section 707. We have also reformatted the last two sentences so that the last sentence will contain the restriction on the prohibition of unprotected vertical openings through horizontal assemblies. We believe it is more appropriate for it to follow the requirements that openings in horizontal assemblies be protected by shaft enclosures in accordance with Section 707 so that any of the Exceptions or alternate provisions in Section 707 that allow for unprotected vertical openings under limited conditions would not apply to horizontal assemblies supporting smoke barriers.

Also, we have responded to the Committee's concern about a direct reference to Section 707.14.1 for the protection of doors located in elevator shaft enclosures that penetrate the horizontal assembly used to support smoke barriers. We are requiring that an enclosed elevator lobby be provided in compliance with Section 707.14.1. The purpose of Section 707.14.1 is to basically limit the spread of smoke from floor to floor in buildings having elevators serving more than three stories. So we have further clarified the reference to enclosed elevator lobbies by indicating that the limitation on the number of stories served is not applicable to this situation. This is because it doesn't matter how many floors are connected by an elevator shaft when the floors serve as horizontal assemblies supporting smoke barriers and are, themselves, smoke barriers since the purpose is to prevent smoke migration from floor to floor.

In conclusion, we believe that the modifications in this Public Comment adequately respond to the Committee's concerns about the provisions contained in proposed new Section 711.9 Smoke Barrier. We further believe that these provisions are essential for the proper enforcement of the code in protecting occupants in place who are generally bed-ridden in Group I-2 occupancies. Therefore, we respectfully request that the ICC Class A voting members approve this Public Comment for approved as modified for Code Change Proposal FS81-07/08.

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Mike Ashley, Alliance for Fire and Smoke Containment and Control (AFSCC) requests Approval as Submitted for Part II.

Commenter's Reason: See above reason for public comment to Part I.

Final Hearing Results

FS81-07/08, Part I
FS81-07/08, Part II

AMPC
AS

Code Change No: **FS85-07/08**

Original Proposal

Sections: 202 (New), 712.3, 2102.1

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND IBC STRUCTURAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Revise as follows:

712.3 (Supp) Fire-resistance-rated walls. Penetrations into or through fire walls, fire-barriers, smoke-barrier walls, and fire partitions and fire-resistance-rated load-bearing walls shall comply with Sections 712.3.1 through 712.3.4. Penetrations in smoke barrier walls shall also comply with ~~712.5~~ 712.6.

2. Add definition as follows:

SECTION 202 DEFINITIONS

PARTITION. A nonstructural interior wall that spans horizontally or vertically from support to support.

PART II – IBC STRUCTURAL

1. Revise as follows:

SECTION 2102 DEFINITIONS AND NOTATIONS

WALL. A vertical element with a horizontal length-to-thickness ratio greater than three, used to enclose space.

The definition of “Wall” is limited in application to the provisions of Chapter 21.

Cavity wall. A wall built of masonry units or of concrete, or a combination of these materials, arranged to provide an airspace within the wall, and in which the inner and outer parts of the wall are tied together with metal ties.

Composite wall. A wall built of a combination of two or more masonry units bonded together, one forming the backup and the other forming the facing elements.

Dry-stacked, surface-bonded walls. A wall built of concrete masonry units where the units are stacked dry, without mortar on the bed or head joints, and where both sides of the wall are coated with a surface-bonding mortar.

Masonry-bonded hollow wall. A wall built of masonry units so arranged as to provide an airspace within the wall, and in which the facing and backing of the wall are bonded together with masonry units.

Parapet wall. The part of any wall entirely above the roof line.

Reason: Section 712.3 requires penetrations into and through vertical fire containment assemblies (i.e., fire walls, fire barriers, smoke barrier walls and fire partitions) to be protected with listed penetration firestop systems or equivalent protection. It is common in light-frame and similar methods of construction for load-bearing walls to be constructed of wood studs or cold-formed steel studs and covered with gypsum wallboard, thereby forming cavities between the studs. When the load-bearing walls are also fire-resistance-rated due to the building’s type of construction and other requirements, penetrations into or through the load-bearing walls by pipes, tubes, conduits, electrical boxes and other penetrating items can compromise the ability of the wall to support design loads unless the penetrations are protected in the same manner as the penetrations of fire containment assemblies are currently required to be protected.

The continuity provisions for fire barriers (Section 706.5), shaft enclosures (by reference to the provisions for fire barriers), fire partitions (Section 708.4), smoke barriers (Section 709.4), and horizontal assemblies (Section 711.4) require the supporting construction to be protected with fire-resistance-rated construction at least equal to that of the fire containment assembly being supported. If the supporting construction consists of load-bearing walls constructed of wood studs or cold-formed steel studs and covered by gypsum wallboard, penetrations into or through the membranes of these walls can also compromise the ability of the wall to support the fire containment assembly unless the penetrations are protected in the same manner as the penetrations of fire containment assemblies are currently required to be protected.

The ability of a fire containment assembly to provide its intended protection is only as good as its weakest link. The purpose of this proposal is to eliminate fire-resistance-rated load-bearing walls as a potential weakest link.

Several definitions are revised in conjunction with this proposal. A load-bearing wall is defined in Section 202 as a "metal or wood stud wall that supports more than 100 pounds per linear foot of vertical load in addition to its own weight," or a "masonry or concrete wall that supports more than 200 pounds per linear foot of vertical load in addition to its own weight." Section 2102 defines "wall" as a "vertical element with a horizontal length-to-thickness ratio greater than three, used to enclose space." It is apparent from this latter definition that its application is intended to be limited to the provisions of Chapter 21 on masonry. This proposal clarifies the intent by adding text after the definition of "wall" to specify this limited application.

The IBC uses the term "partition" in numerous places but does not provide a definition for it. Without one in the IBC, it has no technical meaning except to the extent that a technical meaning can be derived from the ordinarily accepted meaning of "partition" (refer to Section 201.4). There is confusion among some code users about the distinction between a "wall" and a "partition." This apparent confusion could have an impact on understanding the application of the requirements for load-bearing walls in this proposal. Consequently, this proposal adds a definition for "partition," which was modeled after the definition of "partition" in Section 11.2 of ASCE 7-05.

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Disapproved

Committee Reason: The committee agreed that the application of the penetration protection requirements to fire-resistance load bearing walls was confusing. Typically, load bearing walls can have any number of penetrations that do not affect the structural integrity of the wall that are not specifically protected in accordance with Section 713.2. If the load bearing wall is not also expected to resist the passage of heat and/or products of combustion, then protection of these penetrations is generally not warranted.

Assembly Action:

None

PART II – IBC STRUCTURAL

Committee Action:

Approved as Submitted

Committee Reason: The definition of wall in Chapter 21 is specific to masonry and this proposal makes that clear.

Assembly Action:

None

Final Hearing Results

FS85-07/08, Part I
FS85-07/08, Part II

D
AS

Code Change No: **FS89-07/08**

Original Proposal

Section: 712.3.2

Proponent: Bob Eugene, Underwriters Laboratories Inc.

Revise as follows:

712.3.2 (Supp) Membrane penetrations. Membrane penetrations shall comply with Section 712.3.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire-resistance will not be reduced.

Exceptions:

1. Membrane penetrations of maximum two-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area, provided the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m²) in any 100 square feet (9.29m²) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following:

- 1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual non-communicating stud cavities;
- 1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;
- 1.3. By solid fireblocking in accordance with Section 717.2.1;
- 1.4. By protecting both outlet boxes with listed putty pads; or
- 1.5. By other listed materials and methods.
2. Membrane penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise. Such boxes on opposite sides of the wall or partition shall be separated as follows:
 - 2.1. By a horizontal distance of not less than 24 inches (610 mm);
 - 2.2. By solid fireblocking in accordance with Section 717.2.1;
 - 2.3. By protecting both boxes with listed putty pads; or
 - 2.4. By other listed materials and methods.
3. Membrane penetrations by electrical boxes of any size or type, which have been listed as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.
4. Membrane penetrations by boxes other than electrical boxes provided such penetrating items and the annular space between the wall membrane and the box, are protected by an approved membrane penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water, and shall have an F and T rating of not less than the required fire-resistance rating of the wall penetrated and be installed in accordance with their listing.
5. The annular space created by the penetration of an automatic sprinkler, provided it is covered by a metal escutcheon plate.

Reason: This proposal is intended to coordinate the requirement of the International Building Code (IBC) with the requirements of the International Residential Code (IRC). During the 2006/2007 Code Development Cycle, this same wording was proposed for inclusion in the IRC and the IBC under Proposal No. FS83. The IRC Building/Energy Committee approved the proposal for inclusion in Section R317.3.2 of the IRC. The IBC Fire Safety Committee brought up concerns and the proposal was disapproved for the IBC. Although the code language included herein is identical to that submitted during the previous cycle under Proposal No. FS83, the justification will attempt to address the concerns of the IBC Fire Safety Committee.

Exceptions 1 and 2 to Section 712.3.2 of the IBC permit electrical boxes to penetrate the membranes of fire-resistance-rated walls and partitions with certain limitations. The limitations on steel electrical boxes covered in Exception 1 include the maximum size of box, the maximum aggregate area of boxes per 100 sq ft of wall area, the annular space between the boxes and the wall membrane, and various methods of separating boxes on opposite sides of walls. Item 1.1 currently requires separation of electrical boxes on opposite sides of walls or partitions by a minimum of 24 in. Presumably, this is intended to place boxes on opposite sides of walls or partitions in separate stud cavities. However, Item 1.1 does not differentiate between installations in walls or partitions constructed with individual stud cavities versus those where the adjacent stud cavities are interconnected. An example of the former would be a wall constructed of either wood or steel studs with gypsum board applied directly to the studs. Examples of the latter would be walls or partitions constructed using resilient channels, or those using parallel rows of studs or staggered studs. Parallel stud construction typically consists of two rows of studs on separate wood plates or steel tracks at the top and bottom. Staggered stud construction typically consists of the two rows of studs on oversized common wood plates top and bottom, with the studs alternately aligned with opposite sides of the common wood plates.

When electrical boxes are placed in adjacent cavities on opposite sides of walls or partitions constructed with individual stud cavities, the studs act as fireblocking to limit the transfer of heat through the wall via the electrical boxes. However, this fireblocking by the studs does not exist for walls or partitions without individual stud cavities. In walls or partitions without individual stud cavities, such as with walls constructed with parallel rows of studs or staggered studs, penetrations by electrical boxes expose the interior spaces within the wall to the free passage of heat and products of combustion, which can travel laterally within the wall. The free transfer of heat and products of combustion could potentially compromise the integrity of the fire-resistance-rated barrier if unprotected outlet box penetrations exist on both sides of the wall.

In summary, the specific intent of this proposal is to limit the use of the current 24 in. separation in Item 1.1 to walls constructed with individual stud cavities. Electrical boxes on opposite sides of walls or partitions without individual cavities will as a result need to be protected by one or more of the methods described in Items 1.2 through 1.5.

During the 2006/2007 Code Development Cycle, the Fire Safety Committee had two concerns about the proposed changes to Item 1.1. First, they questioned how the revisions to Item 1.1 coordinate with Items 1.2 through 1.5. With or without this proposal, Item 1.1 provides one solution for separating boxes on opposite sides of the wall. If it applies, it is an option. If not, some other solution is needed. Items 1.2 through 1.5 provide other solutions. Second, they questioned whether a 24 in. separation between boxes on opposite sides of the wall was needed in a wall constructed with non-communicating stud cavities. For wood stud walls, this question is already addressed via Item 1.2. Item 1.2 allows the boxes to be separated by solid fireblocking. Section 718 lists nominal 2 in. lumber as appropriate for fireblocking. As such, boxes separated by a nominal 2 in. wood stud, regardless of the spacing, are permitted by Item 1.2. The answer to the Committee's question is not as clear for steel stud walls. The 24 in. separation first appeared in the 1979 Edition of the ICBO Uniform Building Code. Unfortunately, the original proposal does not state the justification for the 24 in. separation. As indicated earlier, presumably it was intended to place boxes on opposite sides of walls in separate stud cavities. Presumably, it was also intended to cover wood and steel stud walls. Since stud spacing is typically 12, 16 or 24 in. OC, a 24 in. box separation always assures the boxes are in different cavities. Certainly alternative wording could be developed to likewise assure boxes on opposite sides of the wall are in different cavities even with some lesser spacing. However, without having data to justify some other approach, it is suggested the more conservative approach of maintaining the current 24 in. separation be retained for walls constructed with non-communicating stud cavities.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this was an appropriate clarification with respect to membrane penetration requirements that would be consistent with the requirements of the IRC.

Assembly Action:

None

Final Hearing Results

FS89-07/08

AS

Code Change No: **FS90-07/08**

Original Proposal

Section: 712.3.2

Proponent: Bob Eugene, Underwriters Laboratories Inc.

Revise as follows:

712.3.2 (Supp) Membrane penetrations. Membrane penetrations shall comply with Section 712.3.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire-resistance will not be reduced.

Exceptions:

1. Membrane penetrations of maximum two-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area, provided the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m²) in any 100 square feet (9.29m²) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
 - 1.1. By a horizontal distance of not less than 24 inches (610 mm);
 - 1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;
 - 1.3. By solid fireblocking in accordance with Section 717.2.1;
 - 1.4. By protecting both outlet boxes with listed putty pads; or
 - 1.5. By other listed materials and methods.
2. Membrane penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise. Such boxes on opposite sides of the wall or partition shall be separated as follows by one of the following:
 - 2.1. ~~By a the horizontal distance of not less than 24 inches (610 mm) specified in the listing of the electrical boxes;~~
 - 2.2. By solid fireblocking in accordance with Section 717.2.1;
 - 2.3. By protecting both boxes with listed putty pads; or
 - 2.4. By other listed materials and methods.
3. Membrane penetrations by electrical boxes of any size or type, which have been listed as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

4. Membrane penetrations by boxes other than electrical boxes provided such penetrating items and the annular space between the wall membrane and the box, are protected by an approved membrane penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water, and shall have an F and T rating of not less than the required fire-resistance rating of the wall penetrated and be installed in accordance with their listing.
5. The annular space created by the penetration of an automatic sprinkler, provided it is covered by a metal escutcheon plate.

Reason: This proposal is intended to coordinate the requirement of the International Building Code (IBC) with the requirements of the International Residential Code (IRC). During the 2006/2007 Code Development Cycle, this same wording was proposed for inclusion in the IRC and the IBC under Proposal No. FS83. The IRC Building/Energy Committee approved the proposal for inclusion in Section R317.3.2 of the IRC. The IBC Fire Safety Committee brought up concerns with other provisions included within Proposal No. FS83, and the proposal was disapproved in its entirety for the IBC. There were no concerns expressed on the proposed revision to Item 2.1. As such, the proposed revision to Item 2.1 included herein is identical to that submitted during the previous cycle under Proposal No. FS83 and approved for inclusion in the IRC.

Exceptions 1 and 2 to Section 712.3.2 of the IBC permit electrical boxes to penetrate the membranes of fire-resistance-rated walls and partitions with certain limitations. Exception 1 addresses steel electrical boxes while Exception 2 addresses listed electrical boxes of any materials. Exception 2 specifically permits membrane penetrations of electrical boxes of any materials provided the boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with their listing. In the case of listings through UL, the listings are covered under the product category "Outlet Boxes and Fittings Classified for Fire Resistance" (CEYY). Each listing states the Model No., the wall construction, the maximum individual opening size, the maximum aggregate area of openings per 100 sq ft of wall area, the maximum annular space between the boxes and the wall membrane, and the minimum separation between boxes on opposite sides of the wall. Prior to the year 2000, all UL listed nonmetallic boxes had been tested with a minimum separation of 24 in. The 24 in. separation was intended to assure that boxes on opposite sides of the wall were in separate stud cavities. In 2000, one manufacturer developed, tested and listed boxes with a lesser separation, allowing boxes on opposite sides of the wall to be located in the same stud cavity. As such, their listing states the lesser spacing. Since that time several other manufacturers have developed, tested and listed boxes which can also be installed at a separation less than 24 in. As such, Item 2.1 is more restrictive than the testing and listings would now suggest is needed. This proposal is simply intended to permit the installation of boxes on opposite sides of the wall at the horizontal separation permitted by the listing.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that many electrical boxes have been tested as part of the fire rated assembly; therefore limiting the horizontal distance to that specified by the testing is reasonable.

Assembly Action:

None

Final Hearing Results

FS90-07/08

AS

Code Change No: FS95-07/08

Original Proposal

Section: 712.4.1.1.2

Proponent: John Valiulis, PE, Hilti, Inc.

Revise as follows:

712.4.1.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM 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 and a T-rating of not less than 1 hour but not less than the required rating of the floor penetrated.

Exception: Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T- rating.

Reason: To clarify what types of installation conditions can prevent a floor through-penetration from getting unsafely hot in the event of a fire.

The normal requirement for firestopping of a penetration through a floor is for the firestop system to provide a T-rating that is equivalent to the F-rating, so as to prevent the penetrant from exceeding a temperature rise of 325 F on the unexposed (non-fire) side. This is normally accomplished by providing some amount of thermal insulation on the penetrating item.

It has long been generally recognized that if the penetrating item is concealed within a wall, then the conditions that can lead to an unsafe temperature rise in the penetrating item should not exist. This occurs due to two possible conditions:

1. The penetrating item is shielded from the fire below the floor by being contained within the cavity of a wall. This will prevent direct heat transfer from the fire to the penetrating item, thus allowing the temperature above the floor from rising as it would if the penetrating item was exposed to the fire.
2. The penetrating item is protected from accidentally igniting combustible contents in the space above the floor by being contained above the floor within the cavity of a wall.

Either will achieve the desired effect, either by keeping the penetrant from getting as hot as quickly, or by shielding an overheated penetrant from combustibles in the room above. The clarification to the exception is thus proposed to indicate that either option would accomplish the desired goal, albeit in a different way.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee recognized that if the penetrating item is concealed within a wall, then the conditions that can lead to an unsafe temperature rise in the penetrating item should not exist; therefore removing the requirement for a T-rating at these locations is reasonable.

Assembly Action:

None

Final Hearing Results

FS95-07/08

AS

Code Change No: FS97-07/08

Original Proposal

Section: 712.4.2.1

Proponent: John Valiulis, PE, Hilti, Inc.

Revise as follows:

712.4.2.1 Noncombustible penetrating items. Noncombustible penetrating items that connect not more than three stories are permitted, provided that the annular space is filled to resist the free passage of flame and the products of combustion with an approved noncombustible material ~~to resist the free passage of flame and the products of combustion~~ or with a fill, void or cavity material that is tested and classified for use in through-penetration firestop systems.

Reason: The purpose of this code change is to expand the range of materials that are allowed to be used for sealing of penetrations in non-fire-resistance rated floors to include the materials that are already allowed by this code to be used to seal penetrations in fire-resistive floors.

Materials that are tested and classified by accredited test laboratories as "fill, void or cavity materials for use in through-penetration firestop systems" are used as part of firestop systems that are tested and listed in accordance with test method ASTM E814 (UL 1479) to meet the requirements of IBC section 712. 4.1.1.2 "Through-penetration firestop system". With very few exceptions, these materials would NOT meet the definition of non-combustible, and thus would not be permitted per the 2006 IBC to seal penetrations in non-fire-resistance rated assemblies. However, if these materials can be used to meet the requirements for the sealing of penetrations in fire-resistance rated assemblies, it stands to reason that they should also be allowed as an option in sealing penetrations through non-fire-resistance rated floors. The present code language is overly restrictive and prohibits the use of other products that can achieve the same performance just as well or possibly even better.

Another indication of the fact that the requirement in 712.4.2.1 is unnecessarily restrictive is the fact that the very next code article, 712.4.2.2, which deals with both combustible and noncombustible penetrating items, does not mandate the sealing material to be non-combustible. Since

the sealing of penetrating items that are combustible is logically more demanding than the sealing of penetrating items that are non-combustible, it stands to reason that if the requirement for a non-combustible sealant does not exist for sealing combustible penetrants, then there is no need to impose that restriction for the sealing of non-combustible penetrants, as long as the sealant material has been demonstrated to have properties that make it suitable for use in fire-related applications, as is the case with the classified “fill, void or cavity materials”.

The exceptional demands placed on such materials by firestop system testing (per ASTM E814/UL1479) means that materials that have succeeded in being so listed will have properties that make them particularly suitable to seal the annular space in both rated or non-rated floors, with properties such as excellent adhesion to both substrate and penetrants, and good high-temperature resistance via a variety of chemical and physical processes such as insulation, ablation or intumescence.

Materials that have met the requirements for Classification as “Fill, void or cavity material for use in through-penetration firestop systems” can be found, for example, in the UL Fire Resistance Directory (or online at www.UL.com) under the listing category XHHW.

Cost Impact: The code change proposal will not increase the cost of construction. The proposed code change would allow the user additional options and additional flexibility, without disallowing the solution that has previously existed.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that it was appropriate to expand the range of materials that are allowed to be used for sealing of penetrations in non-fire-resistance rated floors to include the materials that are already allowed by this code to be used to seal penetrations in fire resistance rated floors.

Assembly Action:

None

Final Hearing Results

FS97-07/08

AS

Code Change No: FS99-07/08

Original Proposal

Section: 712.5

Proponent: John Williams, Washington State Department of Health, Construction Review Services, representing Washington Association of Building Officials, Technical Code Development Committee

Revise as follows:

712.5 Penetrations in smoke barriers. Penetrations in smoke barriers shall be tested in accordance with the requirements of UL 1479 for air leakage. ~~The air leakage rate of the penetration assembly shall not exceed 5.0 cfm per square foot (0.025m³/s • m²) of penetration opening at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests.~~

Reason: To delete the requirement for an individual penetration of a smoke barrier to comply with 5 cfm/sq ft. The 5 cfm/sq ft value imposes a restriction on an individual opening rather than minimizing the total smoke leakage within a given area. Thus, it does not significantly improve life safety and only serves to raise the cost of construction.

The Standard, UL 1479 includes an optional air leakage test to determine how well a particular opening is sealed against particulate air and smoke. While in principle it is a good idea to be cognizant of air leakage, this code requirement does not make buildings safer because the method used to report air leakage is flawed.

Reporting air leakage by expressing it in terms of cfm/sq ft is not the actual leakage through the opening. This allows the test to be manipulated to comply with the 5 cfm/sq ft value while at the same time not reducing the air leakage through the opening.

Air leakage occurs within unsealed space within a given opening. In the case of grouped electrical or communications cabling, it represents the interstitial space between each cable within the bundle. In other words, the cables typically do not nest tightly enough to prevent leakage from occurring within the bundle itself. Using caulk to provide a seal around the bundle will provide a near hermetic seal around the bundle, but it will not reduce the leakage through the interstitial space within the bundle. Therefore, the leakage within the bundle is a constant. To mathematically show the flaw in expressing leakage in terms of cubic feet per minute per square foot, please see the examples below:

Consider a 4" diameter cable bundle passes through a 0.5 sq ft opening and the actual leakage is 4.9 cfm - expressed in cfm/sq ft, the leakage would be 9.8 cfm/sq ft (4.9/0.5=9.8).

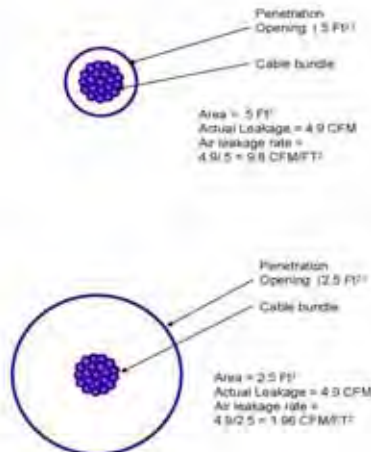
However, if the same 4" diameter cable bundle passes instead through a 2.5 sq ft opening, the interstitial (i.e. unsealed) space within the bundle does not change, so the actual leakage is still 4.9. However, dividing 4.9 by 2.5 will yield a leakage rating of 1.96 cfm/sq ft (4.9/2.5=1.96). The 2 cfm/sq ft value complies with the requirements of Section 712.5 yet the leakage remains the same.

The easy way to make a system pass is to increase the size of the opening. It is not improving life safety because the actual leakage has not been reduced despite the fact that the design listing may state that it provides an L Rating of 5 cfm/sq ft or less. Additionally, most third party laboratories list opening sizes in terms of a "maximum", but they do not specify a minimum opening size. Therefore, a design listing with a published L Rating less than 5 cfm/sq ft may actually provide false comfort since the same grouped penetrant bundle installed through a smaller opening will have a computed L Rating above 5 cfm/sq ft when tested despite the fact that the design listing permits the installation in smaller openings by specifying a maximum opening size without restricting the minimum size.

Finally, limiting an individual opening to 5 cfm/sq ft, but not capping the aggregate may encourage the practice of simply making more small openings that do comply with 5 cfm/sq ft to simply get the same volume of building services into a given area. If a group of air conditioning line sets has an L Rating greater than 5 cfm/sq ft, simply splitting the bundle into two openings may in fact allow each individual bundle to comply with 5 cfm/sq ft, but if you calculate the interstitial space, the actual leakage doesn't change. This has the effect of weakening the wall overall.

Section 712.5 as presently written in the 2006 IBC may actually have a negative impact on life safety by compromising the performance of the assembly by promoting the concept of creating larger openings or a series of smaller openings. The 5 cfm/sq ft value was prematurely added to the codes. It should be struck until such time that reporting methods improve or a better methodology for evaluating leakage through a smoke barrier can be developed.

I am not averse to leaving a reference to the air leakage tests of UL 1479 in the code for now provided that the value is eliminated. It plays up the importance of looking for tested systems, while not mandating a specific value that is arbitrary and subject to exploitation of present testing and reporting methods.



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

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The committee felt that criteria for testing of penetrations through smoke barriers in accordance with UL 1479 were needed and should not simply be deleted; this would create a hole in the code.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Tony Crimi, A.C. Consulting Solutions Inc., representing International Firestop Council and Bob Eugene, Underwriters Laboratories Inc. request Approved as Modified by this public comment.

Modify proposal as follows:

712.5 Penetrations in smoke barriers. Penetrations in smoke barriers shall be tested in accordance with the requirements of UL 1479 for air leakage. The air leakage rate of the penetration assemblies measured at 0.30 inch (7.47 Pa) of water in both the ambient temperature and elevated temperature tests, shall not exceed:

1. 5.0 cfm per square foot (0.025m³ / s-m²) of penetration opening for each through-penetration firestop system, or,
2. A total cumulative leakage of 50 cfm for any 100 square feet of wall area, or floor area.

Commenter-s Reason: (Crimi) There is a need to better define and quantify the performance of Smoke Barriers & Smoke Partitions with respect to their ability to prevent smoke from migrating across them in a fire situation. The existing language in 712.5 of the IBC is a means of providing some minimal level of performance for the through penetrations. The current language has the potential to be manipulated to make the requirement ineffective because the 5 cfm/sq ft value imposes a restriction on an individual opening rather than restricting the total smoke leakage within a given area. To better specify the limits for smoke leakage of through penetrations in Smoke Barriers it is more reasonable to require a total smoke barrier performance level per 100 ft² (for example) in addition to dealing with individual items. By doing that, it would be possible to be more flexible with the individual penetrations, but more comprehensive on the smoke barrier leakage performance.

Justification: This proposed Code change is intended to clarify and improve the Code regarding the requirements for smoke leakage through penetrations in smoke barriers. This proposal would retain the existing 5 cfm/ft² for individual through penetrations as one option, but would allow a new alternative requirement for the cumulative total leakage of all through-penetrations in a smoke barrier. The 50 cfm suggested here is based on two approaches:

1. A very simplistic approach of a theoretical maximum of 10 through penetrations @ max allowed 5 cfm/ft² in 100 ft² of wall or floor area.
2. Section 909.5 permits 1 sq ft of leakage area per 1000 sq feet of wall space. Based on some fundamental assumptions about anticipated pressure differentials during fires, the cumulative value of 50 cfm per 100 ft² proposed also represents approximately 50% of that permitted leakage.

Consequently, if the L-rating of a particular system being used is less than the maximum of 5 cfm/ft², then more through-penetrations could be installed in the same 100 ft² of wall area. Alternatively, an individual through-penetration could be greater than 5 cfm/ft² if the total for the 100 ft² of wall or floor area does not exceed the 50 cfm cumulative value.

Section 715.4.3.1 of the IBC currently includes requirements for leakage rated smoke and draft control doors in corridors and smoke barriers. In addition to these individual limits, the IBC has effectively already established a cumulative level of smoke leakage through these doors in Chapter 10 by identifying the required number of openings for exits and exit access. In addition, Section 705.8 limits the aggregate width of openings at any floor level in a Fire Wall to 25% of the length of the wall. Similarly, Section 706.7 also limits the maximum aggregate width of openings to 25% for Fire Barriers.

For smoke and draft control doors, the IBC contains limits requires the addition of 3.0 cfm/sq ft for each door within the 100 sq ft area (measured at 0.1 in of water column), since that its the limit for smoke and draft control doors in UL 1784 and NFPA 105. The value for leakage through penetrations is actually identical to the leakage rating of smoke and draft control doors in smoke barriers, since 3 cfm/ft² measured at 0.1 in of water column is equivalent to 5.2 cfm/ft² at 0.3 inches of water.

Commenter-s Reason: (Eugene) The original proponent pointed out some valid issues relating to the current code provisions relating penetration of smoke barriers. However, deleting the quantitative requirements entirely will leave an unenforceable provision in the code. As such, this public comment is intended to present a solution to the issues brought up by the original proponent.

This proposal suggests two either/or requirements to the air leakage requirements. First, it suggests the current limit of 5.0 cfm per square foot of penetration opening be maintained. Second, it suggests an absolute limit of permissible smoke leakage per 100 sq ft of wall or floor area. The 50 cfm leakage was selected as a reasonable compromise based to the performance of systems published in the UL Fire Resistance Directory.

Final Hearing Results

FS99-07/08

AMPC

Code Change No: FS102-07/08

Original Proposal

Section: 713.1

Proponent: Jason J. Krohn, PE, Precast/Prestressed Concrete Institute

Revise as follows:

713.1 (Supp) 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 and enclosed parking ~~structures~~ garages constructed in accordance with Sections 406.3 and 406.4, 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: Exception 8 of Section 707.2 permits floor openings for automobile ramps in open and enclosed parking garages without shaft enclosures. If floor openings for ramps are unenclosed in enclosed garages, there is no logic in requiring fire-resistive joint systems for joints in floors of enclosed garages. The revised wording of Exception 5 is similar to existing text in Exception 8 of Section 707.2. The change from open parking "structure" to "garage" is consistent with the terminology used in Section 406.3.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that since floor openings for ramps are unenclosed in enclosed garages, as allowed in Exception 8 of Section 707.2, there is no logic in requiring fire-resistive joint systems for joints in floors of enclosed garages.

Assembly Action:

None

Final Hearing Results

FS102-07/08

AS

Code Change No: **FS103-07/08**

Original Proposal

Section: 713.1

Proponent: Tom Rubottom, City of Lakewood, CO, representing the Colorado Chapter of ICC

Revise as follows:

713.1 (Supp) 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 ~~and ramps~~ within open ~~parking structures~~ and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, 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: Section 713.1 Exception 2 states, "Floors where the joint is protected by a shaft enclosure in accordance with Section 707". Section 707.2, Exception 8 states, "A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively". The code is not clear that compliance with Exception 8 to Section 707.2; in turn is complying with Exception 2, to Section 713.1.

It makes no sense to permit the ramps or floors in open and enclosed parking facilities to open to the other levels with no protection; however require that the joints created between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies to be protected.

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

Public Hearing Results

Errata: FS103-07/08: Revise exception 5 to Section 713.1 (Supp) by removing the strikeout from the word "open." Exception 5 should read as follows:

5. Floors ~~and ramps~~ within open ~~parking structures~~ and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, respectively.

Committee Action:

Approved as Submitted

Committee Reason: Consistent with FS102-07/08, the committee agreed that since floor openings for ramps are unenclosed in enclosed garages, as allowed in Exception 8 of Section 707.2, there is no logic in requiring fire-resistive joint systems for joints in floors of enclosed garages.

Assembly Action:

None

Final Hearing Results

FS103-07/08

AS

Code Change No: FS110-07/08

Original Proposal

Section: 713.4

Proponent: Tony Crimi, AC Consulting Solutions Inc, representing North American Insulation Manufacturers' Association (NAIMA) and International Firestop Council

Revise as follows:

713.4 (Supp) Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an approved material or system to prevent the interior spread of fire. Such material or systems shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected either to ASTM E 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) or installed as and tested in accordance with ASTM E 2307 to prevent the passage of flame for the time period at least equal to the fire-resistance rating of the floor assembly and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 704.9.

Reason #1: (NAIMA) To require perimeter fire barrier joint protection systems to be tested to confirm with ASTM Standard E2307 for determining Fire Resistance of Perimeter Fire Barrier Systems rather than continue to permit the outdated reference to ASTM E119.

Perimeter fire barrier systems are unique building construction details not specifically addressed by other fire test methods. The ASTM E2307 test method specifies criteria and methods to be used to determine the fire resistance of perimeter fire barrier systems. Reference to the existing provisions for testing in accordance with ASTM E119, under the conditions stipulated in IBC Section 713.4, was originally retained in order to allow Code users and manufacturers sufficient time to transition to the new test method. At this point, there is no reason to continue to do so.

Perimeter fire barrier systems are unique building construction details not specifically addressed by other fire test methods. ASTM Committee E5 completed the development of ASTM E2307 *Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus* in March of 2004. A perimeter fire barrier system is the perimeter joint protection installed in the space between an exterior wall assembly and a floor assembly. Section 713.4 of the IBC currently addresses these exterior wall and floor intersections by requiring materials or systems to be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a specified minimum positive pressure. However, the ASTM E2307 Standard is clear in identifying that the perimeter fire barrier protection represents a complete system made of numerous material components. Reference to "materials" is not correct or appropriate.

The test method specifies criteria and methods to be used to determine the fire resistance of perimeter fire barrier systems using the intermediate-scale, multistory test apparatus (ISMA). The use of the multi-story test apparatus and this test method are specifically intended to simulate a possible fire exposure on a perimeter fire barrier system. Consequently, this new test method specifies the fire exposure conditions, methods of test, and criteria for evaluation of the ability of a perimeter fire barrier system to maintain the fire resistance where a floor and exterior wall assembly intersect to create a perimeter joint. The fire exposure used is that specified by the test method for the first 30 min of exposure, and then conforms to the Test Methods E 119 time-temperature curve for the remainder of the test in the test room.

ASTM 2307 measures the performance of the perimeter fire barrier system and its ability to maintain a seal to prevent fire spread during the deflection and deformation of the exterior wall assembly and floor assembly expected during a fire condition, while resisting fire exposure from both an interior compartment and from the flame plume emitted from a window burner below. The end point of the fire resistance test is the period of time elapsing before the first condition of compliance is reached as the perimeter fire barrier system is subjected to the time-temperature fire exposure. Having developed this test method, reference to the existing provisions for testing in accordance with ASTM E119, under the conditions stipulated in IBC Section 713.4, should be deleted as the IBC has allow Code users and manufacturers sufficient time to transition to the new test method.

Reason #2: (International Fire Stop Council) To require perimeter fire barrier joint systems to be tested to confirm with ASTM Standard E2307 for determining Fire Resistance of Perimeter Fire Barrier Systems rather than continue to permit the outdated reference to ASTM E119.

Perimeter fire barrier systems are unique building construction details not specifically addressed by other fire test methods. The ASTM E2307 test method specifies criteria and methods to be used to determine the fire resistance of perimeter fire barrier systems. Reference to the existing provisions for testing in accordance with ASTM E119, under the conditions stipulated in IBC Section 713.4, was originally retained in order to allow Code users and manufacturers sufficient time to transition to the new test method. At this point, there is no reason to continue to do so.

ASTM Committee E5 completed the development of ASTM E2307 *Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus* in March of 2004. A perimeter fire barrier system is the perimeter joint protection installed in the space between an exterior wall assembly and a floor assembly. Section 713.4 of the IBC currently addresses these exterior wall and floor intersections by requiring such materials or systems to be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a specified minimum positive pressure.

Perimeter fire barrier systems are unique building construction details not specifically addressed by other fire test methods. The test method specifies criteria and methods to be used to determine the fire resistance of perimeter fire barrier systems using the intermediate-scale, multistory test apparatus (ISMA). The use of the multi-story test apparatus and this test method are specifically intended to simulate a possible fire exposure on a perimeter fire barrier system. Consequently, this new test method specifies the fire exposure conditions, methods of test, and criteria for evaluation of the ability of a perimeter fire barrier system to maintain the fire resistance where a floor and exterior wall assembly intersect to create a perimeter joint. The fire exposure used is that specified by the test method for the first 30 min of exposure, and then conforms to the Test Methods E 119 time-temperature curve for the remainder of the test in the test room.

ASTM 2307 measures the performance of the perimeter fire barrier system and its ability to maintain a seal to prevent fire spread during the deflection and deformation of the exterior wall assembly and floor assembly expected during a fire condition, while resisting fire exposure from both an interior compartment and from the flame plume emitted from a window burner below. The end point of the fire resistance test is the period of time elapsing before the first condition of compliance is reached as the perimeter fire barrier system is subjected to the time-temperature fire exposure. Having developed this test method, reference to the existing provisions for testing in accordance with ASTM E119, under the conditions stipulated in IBC Section 713.4, should be deleted as the IBC has allow Code users and manufacturers sufficient time to transition to the new test method.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the single applicable standard to test exterior curtain wall and floor intersections is ASTM E2307. This standard, unlike ASTM E119 and UL 263, addresses the unique construction details associated with exterior curtain wall and floor intersections.

Assembly Action:

None

Final Hearing Results

FS110-07/08

AS

Code Change No: **FS111-07/08**

Original Proposal

Section: 713.4.1 (New)

Proponent: Tony Crimi, AC Consulting Solutions Inc, representing North American Insulation Manufacturers' Association (NAIMA)

Add new text as follows:

713.4.1 Exterior curtain wall & non fire-resistance rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and non fire-resistance-rated floor or floor/ceiling assemblies shall be sealed with an approved material or system to prevent the interior spread of fire and the free passage of heat and hot gases.

Reason: To require some minimal level of protection of the void spaces located at the perimeter of a building between non-fire-resistance rated floor assemblies and exterior walls or curtain walls. This proposal would treat perimeter openings similar to the way in which Ducts and Penetration through non fire resistance rated horizontal assemblies are currently handled in the IBC.

Section 713.4 addresses the perimeter fire barrier joint for cases where the floor assemblies have a fire resistance rating. However, there is still a need to prevent the free passage of flame, heat and hot gases at the voids created around the perimeter of a floor assembly, even if the floor is not fire resistance rated. Reference to the existing provisions for testing in accordance with ASTM E2307 or ASTM E E119 in IBC Section 713.4, is not applicable to unrated floor assemblies.

The provisions of IBC Section 713.4 only apply to cases where fire resistance-rated floor or floor/ceiling assemblies are required. However, the risk of spread of flames, smoke, heat, and hot gases through the voids created at the intersection of the exterior curtain wall assemblies and unrated floor assemblies still exist. This proposed change is consistent with sections 716.6.3 dealing with Ducts through non fire resistance rated floor assemblies, and 712.4.2 the treatment of penetrations through non fire resistance rated floor assemblies. Both of these sections require the annular space around the penetrating duct to be protected with an approved noncombustible material that resists the free passage of flame and the products of combustion.

There are numerous examples of severe fires spreading through unprotected perimeter gaps created at the zone of interface between an exterior curtain walls and floor or floor/ceiling assemblies. Most notable among these are the First Interstate Bank Tower fire in Los Angeles in 1988 in which lack of any protection around the perimeter of the floor assemblies led to rapid spread of fire and smoke.

This code change proposal will add performance language which will provide minimum protection for these conditions by requiring some type of noncombustible material to be installed to prevent the interior spread of fire and the free passage of heat and hot gases.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

713.4.1 Exterior curtain wall & non fire-resistance rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and non fire-resistance-rated floor or floor/ceiling assemblies shall be sealed with an approved material or system to resist ~~prevent~~ the interior spread of fire and the free passage of heat and hot gases.

Committee Reason: The committee agreed that this type of protection is commonly provided and a typical construction practice; therefore adding the requirement to the code is appropriate and will be useful for the code official for enforcement purposes. The modification to replace the word "prevent" with "resist" seemed to be more appropriate based on the intent of the requirements.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Rick Thornberry, The Code Consortium, Inc., representing Alcan Composites USA, Inc. requests Approval as Modified by this public comment.

Further modify proposal as follows:

713.4.1 Exterior curtain wall &/non fire-resistance rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and non fire-resistance-rated floor or floor/ceiling assemblies shall be sealed with an approved material or system to ~~resist~~ retard the interior spread of fire ~~and the free passage of heat and hot gases~~ between stories.

Commenter's Reason: The purpose of this Public Comment is to further clarify this new section for the protection of the voids created at the intersection of exterior curtain wall assemblies and non-fire-resistance rated floor assemblies. The revisions to the title of the subsection are proposed to be consistent with the title of Section 713.4 and are strictly editorial. Editorial revisions have also been made to the text of the subsection to be consistent with the text in Section 717.2.1 Fireblocking Materials. And the text has been further modified to indicate that the purpose of the protection of the void at the intersection is to retard the interior spread of fire between stories. We believe these revisions are appropriate since this type of protection for nonrated types of construction is similar in concept to fireblocking in combustible construction.

Final Hearing Results

FS111-07/08

AMPC

Code Change No: FS112-07/08

Original Proposal

Section: 713.6

Proponent: Tony Crimi, AC Consulting Solutions Inc., representing International Firestop Council

Revise as follows:

713.6 Fire-resistant joint systems in smoke barriers. Fire-resistant joint systems in smoke barriers, and joints at the intersection of a horizontal smoke barrier and an exterior curtain wall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The air leakage rate of the joint shall not exceed 5 cfm per lineal foot (0.00775 m³/s • m) of joint at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests.

Reason: To require perimeter joints installed at the intersection of exterior curtain wall and horizontal smoke barriers to have the same minimum performance requirement for smoke leakage that currently exists for penetrations and joints in the remainder of the smoke barriers.

When the IBC was updated to require leakage ratings for penetrations and joints in smoke barriers, the joints located at the intersection of the horizontal smoke barrier and the exterior curtain wall were not specifically addressed. Perimeter fire barrier systems are unique building construction details which are required to comply with Section 713.4. This Code change proposal is intended to provide that consistency.

This proposed code change would clarify that the IBC requirements for leakage rating of joints in smoke barriers (Section 713.6) also apply to the perimeter joints installed at the intersection of the exterior curtain wall assemblies and the horizontal smoke barrier. Perimeter fire barrier systems are unique building construction details not specifically addressed by other fire test methods. The current requirements in the IBC specify criteria and methods to be used to determine the fire resistance of perimeter fire barrier systems using either the intermediate-scale, multistory test apparatus (ISMA), or ASTM E119 time-temperature fire conditions. The test criteria for leakage rating of these joints is contained in UL 2079.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that a listed fire-resistant joint system is required at the junction of a horizontal smoke barrier and a curtain wall; therefore the proposed language is appropriate.

Assembly Action:

None

Final Hearing Results

FS112-07/08

AS

Code Change No: **FS113-07/08**

Original Proposal

Section: 714.1.1

Proponent: Maureen Traxler, City of Seattle, WA, representing Washington Association of Building Officials Technical Code Development Committee

Revise as follows:

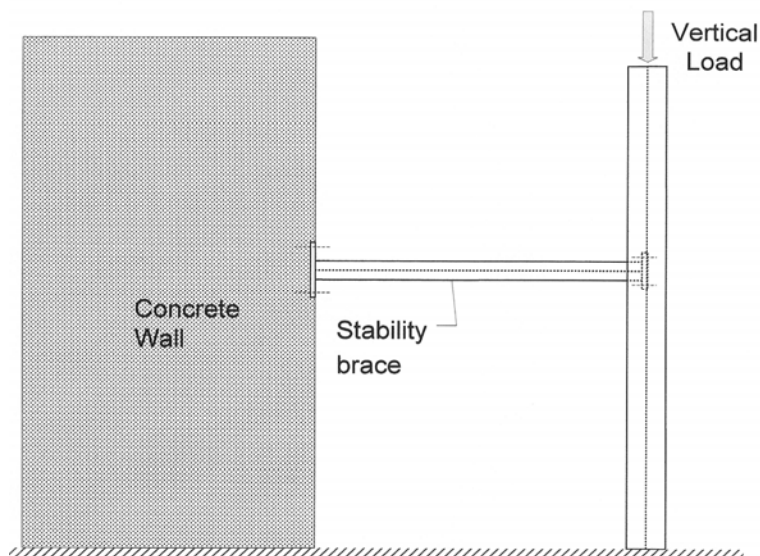
714.1.1 (Supp) Primary structural frame. The primary structural frame shall be is the columns and other structural members including the girders, beams, trusses and spandrels having direct connections to the columns and bracing members designed to carry gravity loads. Bracing members that are essential to the vertical stability of the primary structural frame under gravity loading shall be considered part of the primary structural frame whether or not the bracing member carries gravity loads.

Reason: The purpose of this code change is to clarify the code provisions regarding what portions of the structure should be considered “primary structural frame”, and therefore, require a fire-resistive rating.

The current language is clear in its intent that bracing members that carry only lateral loads (wind or earthquake) are not required to have a fire-resistive rating. Bracing members that carry vertical (gravity) loads as well as lateral loads are required to have a fire-resistive rating. However, the code is silent on bracing members that contribute to the overall stability of the building under gravity loading, but do not directly carry gravity loads.

The figure below illustrates an example where a brace is used to shorten the effective length of a column, preventing the column from buckling under gravity loads. The brace is not directly carrying gravity loads, but under full design loads, if it were not there, the column would fail (assuming the members are designed to the minimum size allowed). In a fire, the brace could be subjected to the same fire conditions as the column. Yet, under the current language in the code, there is no requirement to protect it. So if the fire causes the brace to fail, regardless of what fire-resistive rating is required for the column, the column will also fail.

The proposed language addresses this issue by including these types of braces in the definition of “primary structural frame”. Logically, if the column is required to have a fire-resistance rating, in order for the column to perform as expected, the brace should be protected to the same degree.



Cost Impact: The code change proposal will increase the cost of construction, but only marginally.

Public Hearing Results

Committee Action:**Approved as Submitted**

Committee Reason: The committee indicated that bringing in vertical stability requirements to the primary structural frame was an appropriate technical clarification. The effective length of columns can be increased with proper fire-resistance rated protection provided to the bracing member(s) that are provided to achieve the longer effective length.

Assembly Action:**None**

Final Hearing Results

FS113-07/08

AS

Code Change No: FS115-07/08

Original Proposal

Table 601, Section: 704.8.1, 714.1, 714.1.1, 714.1.2, 714.4, 714.2, 714.2.1, 714.3, 714.6

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY**Revise as follows:**

704.8.1 (Supp) 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 704.8.

Exceptions:

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first story above grade 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 not be 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.

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

Exception: Fire barriers, fire partitions, smoke barriers and horizontal assemblies as provided in Sections 706.5, 708.4, 709.4 and 711.4, respectively.

714.1.1 (Supp) Primary structural frame. The primary structural frame shall ~~be~~ include all of the following structural members:

1. The columns ~~and other~~ ;
2. Structural members ~~including the girders, beams, trusses and spandrels~~ having direct connections to the columns, ~~including girders, beams, trusses and spandrels~~;
3. Members of the floor construction and roof construction having direct connections to the columns; and
4. Bracing members designed to carry gravity loads.

714.2 714.1.2 (Supp) Secondary members. ~~The following structural members of floor or roof construction that are not connected to the columns~~ shall be considered secondary members and not part of the primary structural frame;

1. Structural members not having direct connections to the columns;
2. Members of the floor construction not having direct connections to the columns; and
3. Bracing members not designed to carry gravity loads.

714.4 714.2 (Supp) Column protection. Where columns are required to be fire-resistance rated, the entire column, ~~including its connections to beams or girders~~, shall be provided individual encasement protection by protecting it on all sides for the full column length, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the ~~fire-resistance rating of the column 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.

714.2 714.3 (Supp) ~~Individual encasement protection~~ Protection of the primary structural frame other than columns. ~~Girders, trusses, beams, lintels or other structural~~ Members of the primary structural frame other than columns that are required to have a fire-resistance rating and ~~that 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 individually protected~~ provided individual encasement protection by protecting them on all sides for ~~the~~ their full length, including connections to other structural members, with materials having the required fire resistance rating.

Exception: 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.

714.2.4 714.4 (Supp) Alternative Protection of secondary members. ~~The structural~~ Secondary members that are required to have a fire-resistance rating ~~and are not required to be provided individual encasement protection according to Section 714.2~~ shall be protected by individual encasement protection, by ~~a the~~ the membrane or ceiling ~~protection as specified in~~ of a horizontal assembly in accordance with Section 711, or by a combination of both.

714.3 714.4.1 (Supp) ~~Membrane protection~~ Light-frame construction. King studs and boundary elements that are integral elements in load-bearing walls of light-framed construction shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.

(Renumber Sections 714.2.3-714.2.5 as Sections 714.5-714.7, and Sections 714.3-714.5 as Sections 714.8-714.10)

714.6 714.11 Bottom flange protection. Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet (1829 mm) whether part of the primary structural frame or not, and from the bottom flange of lintels, shelf angles and plates not part of the primary structural frame, regardless of span.

(Renumber subsequent sections)

PART II – IBC GENERAL

Revise table as follows:

TABLE 601 (Supp)
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Primary structural frame ^g See Section 714.1.1 Including columns, girders, trusses	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls Exterior ^{f, g} Interior	3 3 ^a	2 2 ^a	1 1	0 0	2 1	2 0	2 1/HT	1 1	0 0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior ^e	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction <u>and secondary</u> <u>members</u> See Sections 714.1.1 and 714.1.2 Including supporting beams and joists	2	2	1	0	1	0	HT	1	0
Roof construction <u>and secondary</u> <u>members</u> See Sections 714.1.1 and 714.1.2 Including supporting beams and joists	1-1/2 ^b	1 ^{b, c}	1 ^{b, c}	0 ^{b, c}	1 ^{b, c}	0 ^{b, c}	HT	1 ^{b, c}	0

For SI: 1 foot = 304.8 mm.

- Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
- Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
- In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
- An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.
- Not less than the fire-resistance rating required by other sections of this code.
- Not less than the fire-resistance rating based on fire separation distance (see Table 602).
- Not less than the fire-resistance rating as referenced in Section 714.5

Reason: The purpose for this proposal is to make the provisions approved by Proposal FS98-06/07-AS more technically sound and to improve coordination with other provisions of the IBC. Reference to "columns, girders and trusses" in the item under "Building Element" for primary structural frame" in Table 601 is deleted because it is effectively replaced by the reference to Section 714.1.1 and conflicts with the references in Section 714.1.1 to columns, girders, beams, trusses and spandrels.

In Section 714.1, "and assemblies" is deleted because the subject of Section 714.1 is structural members, not assemblies, which implies floor, roof or wall assemblies. The other revisions are editorial. Note that "structural member" is not currently defined in the IBC.

The revision to Section 714.1.1 may appear editorial but it is being done to make it clear which components of the structure are part of the primary structural frame. The current language implies that, in addition to columns and bracing members designed to carry gravity loads, only girders, beams, trusses and spandrels having direct connections to the columns are part of the primary structural frame. The intent, however, is that, in addition to columns, all structural members having direct connections to the columns, including structural members of the floor construction and roof construction and bracing members that are designed to carry gravity loads, are part of the primary structural frame. The listing of girders, beams, trusses and spandrels in Section 714.1.1 should be viewed as examples of such structural members.

Section 714.1.1 is also revised to specify all members of the primary structural frame as structural members. This revision makes it clear that bracing members are structural members and reduces questions over the scope of Section 714.1, which specifies structural members but not bracing members. Structural members of the floor construction and roof construction having direct connections to the columns are also identified as members of the primary structural frame. This revision correlates Section 714.1.1 with Section 714.1.2 on secondary members, which specifies members of the floor construction and roof construction not connected to columns.

Section 714.1.2 is revised because the current language does not make it clear whether structural members not having direction connections to the columns and bracing members not designed to carry gravity loads are members of the floor or roof construction such that they are considered secondary members. The current language also creates a gap between what structural members are considered part of the primary structural frame and what are considered secondary members. This gap consists of a third group of structural members that are neither part of

the primary structural frame nor secondary members. Section 714.1.2 is revised to close this gap by clearly specifying what structural members are secondary members, including structural members not having direct connections to the columns as structural members and bracing members not designed to carry gravity loads.

Also in Section 714.1.2, members of the floor or roof construction “not connected” to the columns is changed to “not having direct connections” to the columns to make it clear that structural members indirectly connected via supporting beams or girders that are directly connected to the columns are not intended to be members of the primary structural frame. Note that horizontal bracing members typically are part of the floor or roof construction. The format of Section 714.1.2 is revised to specify individual items in the same manner as Section 714.1.1.

In conjunction with the proposed changes to Section 714.1.2, secondary members are added to the listings of floor construction and roof construction in Table 601 along with references to Sections 714.1.1 and 714.1.2 in the same manner as the listing for primary structural frame. With the approval of FS98-06/07, secondary members become a distinct type of building element and should be specified in Table 601 along with primary structural frame.

The order of the technical provisions in Section 714 is revised. The primary structural frame consists of the columns with the most restrictive technical provisions (Section 714.4), other members of the primary structural frame with technical provisions that are less restrictive than columns (Section 714.3), and secondary members with technical provisions that are less restrictive than the primary structural frame (Section 714.2.1). These sections are rearranged beginning with the most restrictive: columns in Section 714.2, primary structural frame members other than columns in Section 714.3 and secondary members in Section 714.4.

References to individual encasement protection are clarified. Renumbered Sections 714.2 and 714.3 (current Sections 714.4 and 714.2) reference individual encasement protection but neither section contains technical provisions for it. Also, the title of renumbered Section 714.3 is “individual encasement protection” but the provisions in the section do not mention it. Instead, individual protection on all sides of the structural member for its full length, including connections to other structural members, is specified. If individual encasement protection is the intent, it is not achieved by reliance on the title of the section, which is nonmandatory. Renumbered Sections 714.2 and 714.3 are revised by specifying individual encasement protection as individual protection on all sides of the structural member for its full length, including connections to other structural members, with materials having the required fire-resistance rating.

An exception is added to renumbered Section 714.3 (current Section 714.2) on primary structural frame members other than columns. Beams and girders typically support floor or roof construction, which prevents the protection of their surfaces that bear against floor or roof members (i.e., steel decks). The exception permits the protection on all sides to be only on exposed sides provided the assembly being relied on for the required fire resistance rating limits protection to the exposed sides.

“Structural frame” in Item (a) of Table 601, Section 704.8.1 (Exception 2) and Section 714.6 (Section 714.11 in proposal) is changed to “primary structural frame” for better consistency with the changes approved by FS98-06/07. With these changes a clear distinction will be established between “primary structural frame” in the nonstructural provisions of the IBC and “structural frame” in the structural provisions. The use of “structural frame” is found in Sections 2104.2.1, 2109.4.3, 2109.7.4, 2110.1.1, 3402.1 (technically infeasible) and H109.1.

Additional references to the footnotes in Table 601 at the fire-resistance ratings for roof construction in Table 601 are made to restore the original references, which were inadvertently deleted in the 2007 IBC Supplement. Note that Footnotes (c) and (d) in the 2006 IBC are Footnotes (b) and (c) in the 2007 IBC Supplement.

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Modified

Modify the proposal as follows:

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

(Portions of the proposal not shown remain unchanged)

Committee Reason: The committee felt that the reorganization of Section 714 orders the requirements to create a more user-friendly code, for both the designer and the code official. The modification put back the words “and assemblies” to cover items other than structural members.

Assembly Action:

None

PART II – IBC GENERAL

Committee Action:

Disapproved

Committee Reason: Part II of the proposal was heavily dependant upon the action on Part I, which at the time of the IBC General Committee hearings had not been discussed yet.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Paul K. Heilstedt, PE, FAIA, Chair, representing ICC Code Technology Committee (CTC), requests Approval as Modified by this public comment for Part I.

Modify proposal as follows:

714.1.1 (Supp) Primary structural frame. The primary structural frame shall include all of the following structural members:

1. The columns;
2. Structural members having direct connections to the columns, including girders, beams, trusses and spandrels;
3. Members of the floor construction and roof construction having direct connections to the columns; and
4. ~~Bracing members designed to carry gravity loads.~~ Bracing members that are essential to the vertical stability of the primary structural frame under gravity loading shall be considered part of the primary structural frame whether or not the bracing member carries gravity loads.

714.1.2 (Supp) Secondary members. The following structural members shall be considered secondary members and not part of the primary structural frame:

1. Structural members not having direct connections to the columns;
2. Members of the floor construction not having direct connections to the columns; and
3. ~~Bracing members not designed to carry gravity loads.~~ Bracing members other than those that are part of the primary structural frame in accordance with Section 714.1.1

(Portions of proposal not shown remain unchanged)

Commenter's Reason: The purpose of this public comment is to coordinate the code committee's action on code changes FS 113 and FS 115. Code change FS 113 included technical revisions to the primary structural frame provisions of Section 714.1.1 while FS 115 is primarily an editorial re-formatting of Section 714.

Specifically, approved code change FS 113 revised the requirements for bracing considered part of the structural frame of the building. The approved language from FS 113 has been incorporated in Item 4 to Section 714.1.1. In order to coordinate this change, Item 3 to Section 714.1.2 needs to be revised to clarify that bracing which is not part of the structural frame is not limited to bracing which is not designed to carry gravity loads.

Code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April/2005, the CTC has held fifteen meetings - all open to the public. This public comment is a result of the CTC's investigation of the area of study entitled "NIST World Trade Center Recommendations". The CTC web page for this area of study is: <http://www.iccsafe.org/cs/cc/ctc/WTC.html>

Public Comment 2:

Maureen Traxler, City of Seattle, Department of Planning and Development, representing Washington Association of Building Officials Technical Code Development Committee, requests Approval as Modified by this public comment for Part I.

Modify proposal as follows:

Section 202 ~~714.1.1~~ (Supp) Primary structural frame. The primary structural frame shall include all of the following structural members:

1. The columns;
2. Structural members having direct connections to the columns, including girders, beams, trusses and spandrels;
3. Members of the floor construction and roof construction having direct connections to the columns; and
4. Bracing members designed to carry gravity loads.

Section 202 ~~714.1.2~~ (Supp) Secondary members. The following structural members shall be considered secondary members and not part of the primary structural frame:

1. Structural members not having direct connections to the columns;
2. Members of the floor construction not having direct connections to the columns; and
3. Bracing members not designed to carry gravity loads.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: Sections 714.1.1 and 714.1.2 function as definitions of "primary structural frame" and "secondary members". We are proposing to clearly identify them as definitions to make it obvious to code users that the terms are defined. The terms are used in both Chapters 6 and 7, and, therefore, should be located in Chapter 2. If the definition is located in Chapter 2 it is obvious that the definition applies to both chapters.

This item is on the agenda for individual consideration because a public comment was submitted for Part II.

Public Comment:

Maureen Traxler, City of Seattle Department of Planning and Development, representing Washington Association of Building Officials Technical Code Development Committee, requests Approval as Modified by this public comment.

Modify proposal as follows:

**TABLE 601 (Supp)
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)**

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A ^d	B	A ^d	B	HT	A ^d	B
Primary structural frame ^g See Section 714.1.1 and 714.1.2 202	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls Exterior ^{f, g}	3	2	1	0	2	2	2	1	0
Interior	3 ^a	2 ^a	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior ^e	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction and secondary members See Sections 714.1.1 and 714.1.2 202	2	2	1	0	1	0	HT	1	0
Roof construction and secondary members See Sections 714.1.1 and 714.1.2 202	1-1/2 ^b	1 ^{b, c}	1 ^{b, c}	0 ^{b, c}	1 ^{b, c}	0 ^{b, c}	HT	1 ^{b, c}	0

- a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
- b. through g. (No change)

Commenters Reason: Sections 714.1.1 and 714.1.2 function as definitions of “primary structural frame” and “secondary members”. We are proposing to clearly identify them as definitions to make it obvious to code users that the terms are defined. The terms are used in both Chapters 6 and 7, and, therefore, should be located in Chapter 2. If the definition is located in Chapter 2 it is obvious that the definition applies to both chapters.

Final Hearing Results

**FS115-07/08, Part I AMPC1, 2
FS115-07/08, Part II AMPC**

Code Change No: FS116-07/08

Original Proposal

Section: 714.4

Proponent: Donald R. Monahan, Walker Parking Consultants, representing Parking Consultants Council of the National Parking Association

Revise as follows:

714.4 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.

Reason: This code change is intended to clarify the impact protection requirements to preserve the fire rating for concrete columns in parking garages.

Concrete is a durable material that is not susceptible to damage from moving vehicles at the relatively low speeds in a parking garage. Further, the structural concrete members are designed to resist such impact. Therefore, supplemental impact protection should not be required.

The proponent has 30 years of experience in parking garage design and restoration and has not observed any problems with damage to concrete columns from moving vehicles in parking garages. Further, the vast experience of the 52 members of the Parking Consultants Council of the National Parking Association indicates that corner guards are not necessary in concrete parking structures. Corner guards have seldom been provided in over 3000 parking garages designed by Walker Parking Consultants.

Also, data from the National Fire Incident Reporting System indicates that fires in parking structures are an infrequent occurrence, that they typically do not spread, and that damage to the structural members from vehicle fires is minimal. Therefore, an infrequent chip off a concrete column is not likely to cause significant exposure to fire damage of the concrete column.

The requirement to add corner guards increases the cost of the parking structure by approximately \$0.50 per sf. Per 2007 R.S. Means Square Foot Costs, the corner guards are approximately \$25 per lineal foot installed. For a 5 foot height, the cost per each corner guard is \$125. On a recent project in San Diego at Children's Hospital, there are 66 columns on 5 levels requiring two corner guards and 33 columns on five levels requiring 4 corner guards or 264 corner guards per level. There were then 1320 corner guards required at a cost of \$125 each or a total cost of \$165,000. The total cost is approximately \$0.49 per sf. This cost is an unnecessary expense and does not increase the benefit to life safety in a concrete parking structure.

Cost Impact: This code change proposal will not increase the cost of construction - see the last paragraph of the reason statement above.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the structural integrity of a concrete column supporting a parking garage is sufficiently robust so as not to require impact protection (corner guards).

Assembly Action:

None

Final Hearing Results

FS116-07/08

AS

Code Change No: FS118-07/08

Original Proposal

Section: 714

Proponent: Sarah A. Rice, Schirmer Engineering

Revise as follows:

(Entire section relocated from Section 714 and renumbered to Section 704)

**SECTION ~~714~~ 704
FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS**

(Entire section relocated from Section 704 and renumbered to Section 705)

**SECTION ~~704~~ 705
EXTERIOR WALLS**

(Entire section relocated from Section 705 and renumbered to Section 706)

**SECTION ~~705~~ 706
FIRE WALLS**

(Entire section relocated from Section 706 and renumbered to Section 707)

**SECTION ~~706~~ 707
FIRE BARRIERS**

(Entire section relocated from Section 707 and renumbered to Section 708)

**SECTION ~~707-708~~
SHAFT ENCLOSURES**

(Entire section relocated from Section 708 and renumbered to Section 709)

**SECTION ~~708~~ 709
FIRE PARTITIONS**

(Entire section relocated from Section 709 and renumbered to Section 710)

**SECTION ~~709~~ 710
SMOKE BARRIERS**

(Entire section relocated from Section 710 and renumbered to Section 711)

**SECTION ~~710~~ 711
SMOKE PARTITIONS**

(Entire section relocated from Section 711 and renumbered to Section 712)

**SECTION ~~711~~ 712
HORIZONTAL ASSEMBLIES**

(Entire section relocated from Section 712 and renumbered to Section 713)

**SECTION ~~712~~ 713
PENETRATIONS**

(Entire section relocated from Section 713 and renumbered to Section 714)

**SECTION ~~713~~ 714
FIRE-RESISTANT JOINT SYSTEMS**

Reason: The material contained in Section 714 Fire-resistance Rating of Structural Members is a fundamental provision applicable to all types of fire rated assemblies. It would seem to be something that the user should find right away when reading Chapter 7. As there are no references to Section 714 in any of the specific sections covering specific types of assemblies, it's relocation to the beginning of Chapter 7 seems reasonable.

The order of Chapter 7 would then be:

- 701 General
- 702 Definitions
- 703 Fire Resistance Ratings and Fire Tests
- 704 Fire Resistance Rating of Structural Members
- 705 Exterior Walls
- 706 Fire Walls
- 707 Fire Barriers
- 708 Shaft Enclosures
- 709 Fire Partitions
- 710 Smoke Barriers
- 711 Smoke Partitions

Etc.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the requirements contained in Section 714 Fire-resistance Rating of Structural Members are applicable to all types of fire rated assemblies; therefore it's relocation to the beginning of Chapter 7 seems appropriate.

Assembly Action:

None

Final Hearing Results

FS118-07/08

AS

Code Change No: **FS120-07/08**

Original Proposal

Sections: 715.4, 715.4.5 (New)

Proponent: William F. O'Keeffe, SAFTIFIRST

1. Revise as follows:

715.4 Fire door and shutter assemblies. 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 715.4.1, 715.4.2 or 715.4.3 and the fire-protection rating indicated in Table 715.4. Fire door frames with transom lights, sidelights or both shall comply with Section 715.4.5. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.

Exceptions:

1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies.
2. Floor fire door assemblies in accordance with Section 711.8.

2. Add new text as follows:

715.4.5 Fire door frames with transom lights and sidelights. Door frames with transom lights, sidelights, or both shall be permitted where a ¾-hour fire protection rating or less is required in accordance with Table 715.4. Where a fire protection rating exceeding ¾-hour is required in accordance with Table 715.4, fire door frames with transom lights, sidelights, or both, shall be installed with fire-resistance rated glazing tested as an assembly in accordance with ASTM E119.

(Renumber subsequent sections)

Reason: The proposed text is consistent with NFPA 80 (2006) provisions 6.3.3.3 and 6.3.3.4, which specify the limitations on door frames with transom and sidelights. NFPA 80 was revised in the 2006 revision cycle to clarify that door frames with transom and sidelights installed with fire resistance-rated glazing tested to NFPA 251 (ASTM E119) are permitted where a fire protection rating exceeding ¾-hour is required. This code revision brings the NFPA 80 clarification of the limitations on sidelight and transom door frames into the IBC, where code enforcers and other code users can readily identify the limits, rather than having to refer to NFPA 80.

This code change is needed to address the current confusion by code users that fire protection rated glazing listed for use in door and frames rated in excess for ¾-hours are permitted, when they are not. The use of fire protection rated glazing materials that do not meet the temperature rise limits of ASTM E119 compromise fire safety where door openings are needed for egress in fire wall assemblies requiring 1-hour or above door opening protection.

Cost Impact: This is a clarification of the code and will have no cost impact.

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

715.4 Fire door and shutter assemblies. 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 715.4.1, 715.4.2 or 715.4.3 and the fire-protection rating indicated in Table 715.4. Fire door frames with transom lights, sidelights or both shall comply be permitted in accordance with Section 715.4.5. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.

Exceptions:

1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies.
2. Floor fire door assemblies in accordance with Section 711.8.

715.4.5 Fire door frames with transom lights and sidelights. Door frames with transom lights, sidelights, or both shall be permitted where a ¾-hour fire protection rating or less is required in accordance with Table 715.4. Where a fire protection rating exceeding ¾-hour is required in accordance with Table 715.4, fire door frames with transom lights, sidelights, or both, shall be permitted where installed with fire-resistance rated glazing tested as an assembly in accordance with ASTM E119 or UL 263.

Committee Reason: The committee agreed that requirements specific to fire door frames with transom lights and sidelights needed to be addressed in the code. Further, the committee agreed that the technical requirements were appropriate and based on NFPA 80. The modifications were to opt for more appropriate code language, language consistencies with NFPA 80 and to add an appropriate referenced to an alternative standard (UL 263) referenced elsewhere in the code.

Assembly Action:

None

Final Hearing Results

FS120-07/08

AM

Code Change No: FS121-07/08

Original Proposal

Section: 715.4.3

Proponent: A. Brooks Ballard, Virginia Department of Corrections

Revise as follows:

715.4.3 Door assemblies in corridors and smoke barriers. Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in corridor walls or smoke-barrier walls having a fire-resistance rating in accordance with Table 715.4 shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test.

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have at least a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700°F (927°C).
2. Corridor door assemblies in occupancies of Group I-2 shall be in accordance with Section 407.3.1.
3. Unprotected openings shall be permitted for corridors in multitheater complexes where each motion picture auditorium has at least one-half of its required exit or exit access doorways opening directly to the exterior or into an exit passageway.
4. Horizontal sliding doors in smoke barriers that comply with 408.3 and 408.7.4 in occupancies in Group I-3.

Reason: Horizontal sliding doors are frequently used when highest security is required and in high usage situations in detention and correctional facilities. Exception 4 allows the use of horizontal sliding doors in smoke barriers for Use Group I-3 occupancies in accordance with Section 410.0. This exception recognizes that many security doors are of the sliding type. Swinging doors may present a concern in the operation of such facilities since they can more easily be blocked from opening and used as a weapon. Horizontal sliding doors are allowed in Group I-3 by Section 1008.1.2 and are an integral part of maintaining the security necessary in buildings containing this type of occupant. This exception will allow proper levels of security to be maintained in the highest security areas without compromising occupant life safety in the buildings.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that horizontal sliding doors are allowed in Group I-3 by Section 1008.1.2 and are an integral part of maintaining the security in buildings of this type. This exception will allow proper levels of security to be maintained in these types of buildings without compromising occupant life safety.

Assembly Action:

None

Final Hearing Results

FS121-7/08

AS

Code Change No: **FS136-07/08**

Original Proposal

Sections: 715.5.7, 715.5.7.1, 715.5.7.2

Proponent: William O'Keeffe, SAFIFIRST

Revise as follows:

715.5.7 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.

715.5.7.1 Where 3/4-hour fire protection window assemblies permitted. Fire-protection-rated glazing requiring 45-minute opening protection in accordance with Table 715.5 shall be limited to fire partitions designed in accordance with Section 708 and fire barriers utilized in the applications set forth in Sections 706.3.6 and 706.3.8 where the fire-resistance rating does not exceed 1 hour.

715.5.7.2 Size Area limitations. The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

Reason: This is a clarification of the code to specifically address the rating requirements for interior windows. Additionally, the more correct terminology for section 715.5.7.3 should be "area" limits, rather than "size" limits.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this proposal clarifies the code by specifically addressing the rating requirements for interior windows by providing a specific reference to Table 715.5.

Assembly Action:

None

Final Hearing Results

FS136-07/08

AS

Code Change No: **FS137-07/08**

Original Proposal

Sections: 716.2.1 (IMC [B] 607.2.1)

Proponent: Raymond A. Grill, PE, Arup, representing himself

Revise as follows:

716.2.1 (IMC [B] 607.2.1) Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system designed in accordance with Section 909, 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.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Reason: This change is intended to clarify the code. The current language has been interpreted to not allow the building HVAC system to be utilized as part of a smoke control system. The change doesn't change the requirements of the code. It simply states that the building HVAC system can be utilized. As an example, even in atrium exhaust systems, the normal building mechanical ventilation systems are often designed to provide makeup air for the atrium exhaust system. A separate makeup air system is not mandated by the code and shouldn't be. Fire dampers in supply ducts serving as makeup air in a smoke control mode do not jeopardize the performance of the smoke control system.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

716.2.1 (IMC [B] 607.2.1) Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system ~~designed~~ in accordance with Section 909, 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.

Committee Reason: The added language regarding the performance of mechanical systems used for smoke control is appropriate and will aid in plan review and enforcement. The modification deletes what the committee considered a confusing and unnecessary term.

Assembly Action:

None

Final Hearing Results

FS137-07/08

AM

Code Change No: FS139-07/08

Original Proposal

Sections: 716.3, 716.3.1, 716.3.2, 716.3.2.1 (New), Table 716.3.3.1, 716.3.2.2 (New), 716.3.1.1, 716.3.3.1 (New), 716.3.2.1, 716.3.3.3 (New) [IMC [B] 607.3, [B] 607.3.1, [B] Table 607.3.1, [B] 607.3.1.1, [B] 607.3.2, [B] 607.3.2.1

Proponent: Lee J. Kranz, City of Bellevue, representing The Washington Association of Building Officials (WABO), Technical Code Development Committee

Revise as follows:

716.3 (IMC [B] 607.3) Damper testing, and ratings and actuation. Damper testing, ratings and actuation shall be in accordance with Sections 716.3.1 through 716.3.3.

716.3.1 (IMC [B] 607.3.1) Damper testing. Dampers shall be listed and bear the label of an approved testing agency indicating compliance with the standards in this section. Fire dampers shall comply with the requirements of UL 555. Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire. Smoke dampers shall comply with the requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. Ceiling radiation dampers shall comply with the requirements of UL 555C.

~~716.3.1.2~~ **716.3.2 (IMC [B] 607.3.1-607.3.2) Fire protection Damper rating.** Damper ratings shall be in accordance with Sections 716.3.2.1 and 716.3.2.2.

716.3.2.1 (IMC [B] 607.3.2.1) Fire damper ratings. Fire dampers shall have the minimum fire protection rating specified in ~~Table 716.3.4~~ 716.3.2.1 for the type of penetration.

**TABLE ~~716.3.4~~ 716.3.2.1 (IMC [B] Table 607.3.4 607.3.2.1)
FIRE DAMPER RATING**

(Portions of table not shown do not change)

716.3.2.2 (IMC [B] 607.3.2.2) Smoke damper ratings. Smoke damper leakage ratings shall not be less than Class II. Elevated temperature ratings shall not be less than 250°F (121°C).

716.3.1.4 716.3.3 (IMC [B] 607.3.1.4-607.3.3) Fire Damper actuating device actuation. Damper actuation shall be in accordance with 716.3.3.1 through 716.3.3.3 as applicable.

716.3.3.1 (IMC [B] 607.3.3.1) Fire damper actuation device. The fire damper actuating actuation device shall meet one of the following requirements:

1. The operating temperature shall be approximately 50°F (10°C) above the normal temperature within the duct system, but not less than 160°F (71°C).
2. The operating temperature shall be not more than 286°F (141°C) where located in a smoke control system complying with Section 909.
3. ~~Where a combination fire/smoke damper is located in a smoke control system complying with Section 909, the operating temperature rating shall be approximately 50°F (10°C) above the maximum smoke control system designed operating temperature, or a maximum temperature of 350°F (177°C). The temperature shall not exceed the UL 555S degradation test temperature rating for a combination fire/smoke damper.~~

~~**716.3.2 (IMC [B] 607.3.2) Smoke damper ratings.** Smoke damper leakage ratings shall not be less than Class II. Elevated temperature ratings shall not be less than 250°F (121°C).~~

~~**716.3.2.4 716.3.3.2 (IMC [B] 607.3.2.4-607.3.3.2) Smoke damper actuation methods.** The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:~~

1. Where a smoke damper is installed within a duct, a smoke detector shall be installed in the duct within 5 feet (1524 mm) of the damper with no air outlets or inlets between the detector and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.
2. Where a smoke damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening.
3. Where a smoke damper is installed within an unducted opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet (1524 mm) horizontally of the damper.
4. Where a smoke damper is installed in a corridor wall or ceiling, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.
5. Where a total-coverage smoke detector system is provided within areas served by a heating, ventilation and air-conditioning (HVAC) system, smoke dampers shall be permitted to be controlled by the smoke detection system.

716.3.3.3 (IMC [B] 607.3.3.3) Smoke control system damper actuation. Where a combination fire/smoke damper is located in a smoke control system complying with Section 909, the operating temperature rating shall be approximately 50°F (27.8°C) above the maximum smoke control system designed operating temperature, or a maximum temperature of 350°F (177°C). The temperature shall not exceed the UL 555S degradation test temperature rating for a combination fire/smoke damper.

Reason: This is a reorganization of IBC Section 716.3 related to fire damper, smoke damper and combination fire/smoke damper testing, rating and actuation requirements. The proposed format addresses testing, rating and actuation for all 3 types of dampers into 3 separate subsections which organizes the information to be more user friendly. Item #3 of Section 716.3.1.1 has been relocated to a new Section 716.3.3.3 and has a new title that more accurately reflects its purpose.

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

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: Based on the proponent's request for disapproval.

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Lee J. Kranz, City of Bellevue, Washington, representing Washington Association of Building Officials Technical Code Development Committee, requests Approved as Modified by this public comment.

Modify proposal as follows:

716.3.2 (IMC [B] 607.3.2) Damper rating. Damper ratings shall be in accordance with Sections 716.3.2.1 and ~~716.3.2.2~~ through 716.3.2.3.

716.3.2.3 (IMC [B] 607.3.2.3) Combination fire/smoke damper ratings. Combination fire/smoke dampers shall have the minimum fire protection rating specified for fire dampers in Table 716.3.2.1 for the type of penetration and shall also have a minimum Class II leakage rating and a minimum elevated temperature rating of 250°F (121°C).

716.3.3.1 (IMC [B] 607.3.3.1) Fire damper actuation device. The fire damper actuation device shall meet one of the following requirements:

1. The operating temperature shall be approximately 50°F (10°C) above the normal temperature within the duct system, but not less than 160°F (71°C).
2. The operating temperature shall be not more than ~~350°F (177°C)~~ 286°F (141°C) where located in a smoke control system complying with Section 909.

716.3.3.2 (IMC [B] 607.3.3.2) Smoke damper actuation methods. The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

1. Where a smoke damper is installed within a duct, a smoke detector shall be installed in the duct within 5 feet (1524 mm) of the damper with no air outlets or inlets between the detector and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.
2. Where a smoke damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector listed for releasing service shall be installed on either side of the smoke barrier door opening.
3. Where a smoke damper is installed within an unducted opening in a wall, a spot-type detector listed for releasing service shall be installed within 5 feet (1524 mm) horizontally of the damper.
4. Where a smoke damper is installed in a corridor wall or ceiling, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.
5. Where a total-coverage smoke detector system is provided within areas served by a heating, ventilation and air-conditioning (HVAC) system, smoke dampers shall be permitted to be controlled by the smoke detection system.

~~**716.3.3.3 (IMC [B]607.3.3.3) Smoke control system damper actuation.** Where a combination fire/smoke damper is located in a smoke control system complying with Section 909, the operating temperature rating shall be approximately 50°F (27.8°C) above the maximum smoke control system designed operating temperature, or a maximum temperature of 350°F (177°C). The temperature shall not exceed the UL 555S degradation test temperature rating for a combination fire/smoke damper.~~

716.3.3.3 (IMC [B]607.3.3.3) Combination fire/smoke damper actuation. Combination fire/smoke damper actuation shall be in accordance with Sections 716.3.3.1 and 716.3.3.2. Combination fire/smoke dampers installed in smoke control system shaft penetrations shall not be activated by local area smoke detection unless it is secondary to the smoke management system controls.

716.3.3.4 (IMC [B]607.3.3.4) Ceiling radiation damper actuation. The operating temperature of a ceiling radiation damper actuation device shall be 50°F (27.8°C) above the normal temperature within the duct system, but not less than 160°F (71°C).

716.6.2.1 (IMC [B]607.6.2.1) Ceiling radiation dampers. ~~Ceiling radiation dampers shall be tested in accordance with UL 555C and~~ installed in accordance with the manufacturer’s installation instructions and listing. Ceiling radiation dampers are not required where either of the following applies:

1. Tests in accordance with ASTM E119 have shown that ceiling radiation dampers are not necessary in order to maintain the fire-resistance rating of the assembly.
2. Where exhaust duct penetrations are protected in accordance with Section 712.4.1.2, are located within the cavity of a wall and do not pass through another dwelling unit or tenant space.

(Portions of proposal not shown remain unchanged)

Commenter’s Reason: After meeting with industry representatives we are suggesting approval of this proposal.

This code change accomplishes 5 things:

1. It consolidates all the code requirements for testing, ratings and actuation of dampers into one subsection which makes it more user friendly and accessible.
2. Clarifies that combination fire/smoke dampers must meet the hourly rating requirements of Table 716.3.2.1.
3. Modifies the maximum damper operating temperature for fire dampers used in smoke control systems to 350 degrees F to be consistent with other provisions in IBC Section 716.

4. Clarifies that combination fire/smoke dampers used in smoke control systems shall not be activated by a local area detector as that could render the smoke control system inoperable.

5. Adds ceiling radiation damper actuation criteria.

This change is needed to provide better clarity and usability. The format is organized better because it gives the requirements for each of the 4 types of dampers; fire, smoke, combination fire/smoke and ceiling radiation dampers, in 3 separate subsections; testing, rating and actuation.

For clarity please add the following to the bottom of the reason statement: Stikethroughs and underlines show changes to the current code text.

Final Hearing Results

FS139-07/08

AMPC

Code Change No: FS141-07/08

Original Proposal

Sections: 716.5 (IMC [B] 607.5)

Proponent: Sam Dardano, City of Boulder, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)

Revise as follows:

716.5 (IMC [B] 607.5) (Supp) Where required. Fire dampers, smoke dampers and combination fire/smoke dampers ~~and ceiling radiation dampers~~ shall be provided at the locations prescribed in Sections 716.5.1 through 716.5.7. Where an assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required.

Reason: Ceiling dampers do not belong in this section as none of the referenced sections (716.5.1 through 716.5.7) relate to them.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that ceiling dampers do not belong in this section as none of the referenced sections (716.5.1 through 716.5.7) relate to them.

Assembly Action:

None

Final Hearing Results

FS141-07/08

AS

Code Change No: FS145-07/08

Original Proposal

Sections: 716.5.4 (IMC [B] 607.5.3)

Proponent: Lori Lee Graham, City of Portland, OR

Revise as follows:

716.5.4 (IMC [B] 607.5.3) (Supp) Fire partitions. Ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

1. ~~The partitions are tenant separation or~~ Corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 712.

(Exceptions not shown remain unchanged)

Reason: There has been confusion in the interpretation of this exception. In the IBC, the term 'tenant separation' is used only in conjunction with covered mall buildings. Since covered mall buildings are explicitly addressed in 716.5.4, Exception 2, there is a question about what the term 'tenant separation' means in the first exception and as such the first exception has been used in any case where two tenants are next to each other including dwelling units. Deletion of the first portion of exception 1 allows the corridor exception to remain and does not negatively affect covered malls since they are addressed in exception 2

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that since covered mall buildings are explicitly addressed in 716.5.4, Exception 2, there is a question about what the term 'tenant separation' means in the first exception. Deletion of the first portion of exception 1 allows the corridor exception to remain and does not negatively affect covered malls since they are addressed in exception 2.

Assembly Action:

None

Final Hearing Results

FS145-07/08

AS

Code Change No: **FS147-07/08**

Original Proposal

Sections: 717.2.5, 717.2.5.1 (New); IRC R602.8

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing Spray Polyurethane Foam Alliance

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Delete and substitute as follows:

~~**717.2.5 Ceiling and floor openings.** Where annular space protection is provided in accordance with Exception 6 of Section 707.2, Exception 1 of Section 712.4.1.2, or Section 712.4.2, fireblocking shall be installed at openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels, with an approved material to resist the free passage of flame and the products of combustion. Factory-built chimneys and fireplaces shall be fireblocked in accordance with UL 103 and UL 127.~~

717.2.5 Ceiling and floor openings. Where required by Exception 6 of Section 707.2, Exception 1 of Section 712.4.1.2 or Section 712.4.2, fireblocking of the annular space around vents, pipes, ducts, chimneys and fireplaces at ceilings and floor levels shall be installed with a material specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and resist the free passage of flame and the products of combustion.

717.2.5.1 Factory-built chimneys and fireplaces. Factory-built chimneys and fireplaces shall be fireblocked in accordance with UL 103 and UL 127.

PART II – IRC BUILDING/ENERGY

Revise as follows:

R602.8 Fireblocking required. Fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fireblocking shall be provided in wood-frame construction in the following locations.

1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs; as follows:
 - 1.1. Vertically at the ceiling and floor levels.
 - 1.2. Horizontally at intervals not exceeding 10 feet (3048 mm).
2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
3. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R311.2.2.
4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion. ~~The material filling this annular space shall not be required to meet the ASTM E 136 requirements~~ a material specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and resist the free passage of flame and the products of combustion.
5. For the fireblocking of chimneys and fireplaces, see Section R1003.19.
6. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.

Reason: (IBC) During the last Code change cycle there were discussions concerning fireblocking materials and their use. To address these issues, this code proposal is a revision to the existing Section 717.2.5 of the IBC.

The revision clarifies the requirements for the fireblocking materials. The requirements are that any material used as fireblocking in combustible construction must demonstrate via testing, that it can remain in place and resist the free passage of flame and products of combustion. While a specific test is not specified, some manufacturers have used existing standardized tests to demonstrate that their materials can meet these requirements.

The language for the performance requirements is similar to that already in Section 717.2.5 and in Section 717.2.1 for loose-fill insulation used as fireblocking.

The revision also allows that any material (combustible or noncombustible) can be used if it demonstrates that it can meet the performance requirements. Thus, the words “approved material” were not included in this revision.

This revision provides clearer requirements to assist Code Officials in using this Section.

(IRC) During the last Code change cycle there were discussions concerning fireblocking materials and their use. To address these issues, this code proposal is a revision to the existing Item 4 of Section R602.8 of the IRC.

The revision clarifies the requirements for the fireblocking materials used in this application. The requirements are that any material used as fireblocking must demonstrate via testing, that it can remain in place and resist the free passage of flame and products of combustion. While a specific test is not specified, some manufacturers have used existing standardized tests to demonstrate that their materials can meet these requirements.

The language for the performance requirements is similar to that required in Section R602.8.1.3 [Supplement] of the IRC for loose-fill insulation used as fireblocking.

The revision also allows any material (combustible or noncombustible) to be used if it demonstrates that it can meet the performance requirements. Thus, the additional language added during the last cycle concerning “...not be required to meet the ASTM E 136 requirements” was not included in this revision.

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that these proposed revisions provide good performance language describing how fireblocking needs to perform, which will allow for many products to determine compliance.

Assembly Action:

None

PART II – IRC B/E

Committee Action:

Disapproved

Committee Reason: This proposal would eliminate fireblocking that is in use now and will require testing. There are no testing criteria specified. This may require proprietary material.

Assembly Action:

None

Final Hearing Results

FS147-07/08, Part I
FS147-07/08, Part II

AS
D

Code Change No: FS149-07/08

Original Proposal

Sections: 202 (New), 719.1, 719.2, 719.2.1, 2604 (New), Chapter 35 (New)

Proponent: Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

1. Add new definition as follows:

REFLECTIVE PLASTIC CORE FOIL INSULATION. An insulation material with a reflective metallic surface on at least one side and a thin plastic core containing voids consisting of open or closed cells distributed throughout the material.

2. Revise as follows:

719.1 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 foil insulation shall comply with Section 2604.

719.2 Concealed installation. Insulating materials, where concealed as installed in buildings of any type of construction, shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

Exception: Cellulose loose-fill insulation that is not spray applied, complying with the requirements of Section 719.6, shall only be required to meet the smoke-developed index of not more than 450.

719.2.1 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 foil insulation shall comply with Section 2604.

3. Add new text as follows

SECTION 2604
REFLECTIVE PLASTIC CORE FOIL INSULATION

2604.1 General. The provisions of this section shall govern the requirements and uses of reflective plastic core foil insulation in buildings and structures. Reflective plastic core insulation shall comply with the requirements of 2604.2 and of one of the following: Section 2604.3, 2604.4 or 2604.5.

2604.2 Labeling and identification. Packages and containers of reflective plastic core foil insulation and reflective plastic core foil insulation components delivered to the job site shall bear the label of an approved agency showing the manufacturer's name, the product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

2604.3 Surface burning characteristics. Testing in accordance with ASTM E 84 or UL 723 shall be in accordance with Sections 2604.3.1 and 2604.3.2.

2604.3.1 Special preparation and mounting. Reflective plastic core foil insulation shall be tested in the manner intended for use and at the maximum thickness intended for use, in accordance with ASTM E 84, or UL 723, using the specimen preparation and mounting procedures of ASTM E 2231 or an alternate set of specimen preparation and mounting procedures for ASTM E 84, or UL 723, which are specific to the testing of reflective plastic core foil insulation.

2604.3.2 Exposed applications. If the reflective plastic core foil insulation is used exposed it shall be classified for surface burning characteristics in accordance with Section 803.1 and the requirements of this code for the application. The flame spread index shall not exceed 75 for any application.

2604.4 Room corner test heat release. Reflective plastic core foil insulation shall comply with the acceptance criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 in the manner intended for use and at the maximum thickness intended for use.

2604.5 Thermal barrier. Reflective plastic core foil insulation shall be separated from the interior of a building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250°F (120°C) after 15 minutes of fire exposure, complying with the standard time-temperature curve of ASTM E 119 or UL 263.

2604.5.1 Thermal barrier installation. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on FM 4880, UL 1040, NFPA 286 or UL 1715.

2604.5.2 Surface burning characteristics. The reflective plastic core foil insulation shall exhibit a flame spread index no higher than 75 and a smoke developed index no higher than 450 when tested in accordance with Section 2604.3.1.

(Renumber subsequent sections)

4. Add standard to Chapter 35 as follows:

ASTM

E 2231-07 Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics

Reason: Recent work has shown that the traditional method of testing reflective plastic core foil insulation in the ASTM E 84 test (using chicken wire, or poultry netting, and rods) produces misleading results, with the serious potential for leading to severe fires. Testing reflective plastic core foil insulation with the ASTM E 84 test using chicken wire and rods suggests that the reflective plastic core foil insulation is safe and meets a flame spread index of 25 or less. In fact, when reflective plastic core foil insulation is tested in a more realistic way, with fasteners, the flame spread index of some materials jumps to over 200. A room corner test, NFPA 286, indicates that some types of reflective plastic core insulation do indeed cause rapid flashover (in less than 4 min, while the burner is still just at 40 kW and has not yet been raised to 160 kW). ASTM E 2231 is a standard practice for Steiner tunnel specimen preparation and mounting for pipe and duct insulation materials that does not permit testing using chicken wire (poultry netting) and that can be used for testing reflective plastic core foil insulation materials. Moreover, a process is underway, within the ASTM E05.22 subcommittee, to develop an alternate standard practice specific to reflective plastic core foil insulation materials. It has become apparent that testing via ASTM E 84 with either (a) mounting in accordance with ASTM E 2231 or (b) mounting in accordance with a standard practice specific to plastic core reflective foil insulation materials (yet to be developed) will represent a significant improvement in fire safety.

Alternately, reflective plastic core foil insulation materials can be tested using the room corner test, NFPA 286, or they can be covered with a thermal barrier, just like foam plastic insulation is required to be covered.

The fire safety issues have mainly been found with the foil/bubble materials, but they would also apply to the foil/foam materials, which are already covered under the requirements of foam plastic insulation and don't need additional requirements but should not be excluded from the foam plastic requirements.

This proposal differs from proposal FS147 in the 2006/2007 cycle in several major ways, as follows:

1. This proposal permits continued testing in the Steiner tunnel test (ASTM E 84 or UL 723), but requires the use of an appropriate specimen preparation and mounting method.
2. This proposal excludes reflective foil/fiberglass materials from the new requirements, as these materials are already appropriately tested at present.
3. This proposal includes a definition of reflective plastic core foil insulation, which was absent before.
4. This proposal adds a new section into Chapter 26 that is very similar to the section for foam plastic insulation, which immediately precedes it.
5. The specimen preparation and mounting method proposed, ASTM E 2231, is already used by the ICC family of codes both in the IMC and in the IRC.
6. The new code language proposed is already suitable for incorporating any future standard practice for ASTM E 84 test specimen preparation and mounting of reflective plastic core foil insulation materials, if and when it is developed.
7. The code proposal also addresses section 719.2.1, previously not addressed.

This proposal differs from proposal FS215 in the 2006/2007 cycle in several major ways, as follows:

1. This proposal permits continued testing in the Steiner tunnel test (ASTM E 84 or UL 723), but requires the use of an appropriate specimen preparation and mounting method.
2. This proposal excludes reflective foil/fiberglass materials from the new requirements, as these materials are already appropriately tested at present.
3. The specimen preparation and mounting method proposed, ASTM E 2231, is already used by the ICC family of codes both in the IMC and in the IRC.
4. The new code language proposed is already suitable for incorporating any future standard practice for ASTM E 84 test specimen preparation and mounting of reflective plastic core foil insulation materials, if and when it is developed.
5. This proposal addresses section 719 as well as the new section 2604.
6. This proposal revises the definition as requested by the committee.

Cost Impact: The code change proposal should not increase the cost of construction.

Public Hearing Results

Analysis: Review of proposed new standard ASTM E2231-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Disapproved

Committee Reason: As with FS148-07/08, the committee felt that the proposed requirements for reflective plastic core foil insulation were not totally appropriate. The referenced standard is applicable to a different component (pipe and duct insulation); therefore its applicability to plastic core foil insulation is not clear. Some of the items seem unnecessary, such as the thermal barrier requirements. Lastly, some of the language in the labeling requirements appears difficult to achieve, such as "information to determine that the end use will comply with the code requirements."

Assembly Action:

None

Public Comments

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Jesse J. Beitel, Hughs Associates, Inc., representing Reflective Insulation Manufacturers Association, requests Approved as Modified by this public comment.

Marcelo M. Hirschler, GBH International, representing American Fire Safety Council, requests Approved as Modified by this public comment.

Replace proposal as follows:

REFLECTIVE PLASTIC CORE INSULATION. An insulation material packaged in rolls, that is less than 0.5 inches thick, with at least one exterior low emittance surface (0.1 or less) and a core material containing voids or cells.

719.1 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 2612.

719.2 Concealed installation. Insulating materials, where concealed as installed in buildings of any type of construction, shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

Exception: Cellulose loose-fill insulation that is not spray applied, complying with the requirements of Section 719.6, shall only be required to meet the smoke-developed index of not more than 450.

719.2.1 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 2612.

SECTION 2612
REFLECTIVE PLASTIC CORE INSULATION

2612.1 General. The provisions of this section shall govern the requirements and uses of reflective plastic core insulation in buildings and structures. Reflective plastic core insulation shall comply with the requirements of Section 2612.2 and of one of the following: Section 2612.3 or 2612.4.

2612.2 Identification. Packages and containers of reflective plastic core insulation delivered to the job site shall show the manufacturer's or supplier's name, product identification and information sufficient to determine that the end use will comply with the code requirements.

2612.3 Surface-burning characteristics. Reflective plastic core insulation 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 reflective plastic core insulation shall be tested at the maximum thickness intended for use and shall be tested using one of the mounting methods in Section 2612.3.1 or 2612.3.2.

2612.3.1 Mounting of test specimen. The test specimen shall be mounted on 2-inch (51 mm) high metal frames so as to that create an air space between the unexposed face of the reflective plastic core insulation and the lid of the test apparatus.

2612.3.2 Specific testing. A set of specimen preparation and mounting procedures shall be used which are specific to the testing of reflective plastic core insulation.

2612.4 Room corner test heat release. Reflective plastic core insulation shall comply with the acceptance criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 or UL 1715 in the manner intended for use and at the maximum thickness intended for use.

Commenter's Reason: (Beitel) This comment applies to the following Code proposals: FS148, FS149 and FS195. This comment is an agreement between the proponents of the three referenced Code proposals and other involved industries. This wording was developed at the Code Hearings in Palm Springs and it was proposed as a floor modification. At that time, the FS Committee Chair ruled that the proposed floor modification was out of order due to the perceived extent of the modifications. The Committee basically asked that the proponents of the three Code proposals submit the modification in the Comment process and this Comment addresses that request.

Background

In the last Code cycle, the issue of the fire performance and fire testing of reflective plastic core insulations was raised. The manufacturers of these products were then engaged in a research and testing program to evaluate the fire performance of these products and developed a new mounting method for these types of materials in the ASTM E84 test method such that the E84 flame-spread results could be correlated to full-scale fire tests of the same materials in end-use configurations. This has been accomplished and a new mounting method for these types of materials is currently being processed by ASTM.

FS 195, FS 148 and FS149 were Code proposals submitted to address these issues. The overall purpose was to add a new Section to Chapter 26 that adds a definition of reflective plastic core insulation and provide fire test requirements for these types of materials.

Comment

The proposed Comment is an incorporation of the best points from the three Code Proposals. The primary changes are:

1. Providing pointers in two Sections of the Code (§719.1 & §719.2.1) that send the reader to the appropriate Section in Chapter 26
2. (from FS148 & FS149)
3. Provides an improved definition of the Reflective Plastic Core Insulation material (from FS195, FS148 & FS149 plus other input)
4. Provides a better reference to the tests that are required. These tests use either a new ASTM E84 mounting method (either as a written description or as a new ASTM E84 mounting method in process) or a room/corner test. (from FS148, FS149 & FS195)

The modifications proposed in this Comment, are supported by the proponents of FS148, FS149 and FS195 as well as many other interested parties. These parties believe that this is a very good compromise for all and it should be adopted by the membership so these products can be appropriately regulated in the 2009 edition of the IBC.

Commenter's Reason: (Hirschler) This comment is the result of an agreement between the proponent of FS 148 and FS 149 and the proponent of FS 195. It combines the key elements of both proposals. This same wording was proposed as a floor modification at the Palm Springs code hearings but the committee chair ruled that the modifications to the individual proposals were too significant to be considered.

The key problem to be solved is that "reflective plastic core insulation" is not properly tested when the ASTM E 84 (Steiner tunnel) fire test method is used without the correct mounting procedure, since it has been shown that materials can pass the ASTM E 84 test (when conducted in a way that is inappropriate for reflective plastic core insulation materials) and yet lead to flashover in a room-corner test. Materials that perform in that fashion are not safe. Manufacturers have developed alternate materials that can be used properly.

The testing problem can be solved in two ways: (a) testing in accordance with the room-corner fire test (NFPA 286), which is suitable for use by all interior finish materials or (b) testing in accordance with ASTM E 84 but mounting the material such that it is tested at the maximum thickness intended for use and by using a mounting method that is specific for its use, such as being mounted on 2-inch (51 mm) high metal frames so as to that create an air space between the unexposed face of the reflective plastic core insulation and the lid of the test apparatus.

There are some differences between this comment and the original FS 149 proposal:

A more generic definition is being proposed here (not only foil needs to be used).

There is an understanding here that foam plastic core reflective insulation is a foam plastic and needs to meet the requirements of exposed foam plastics, so that this need not be repeated.

There is an understanding here that insulation materials intended for use as pipe and duct insulation (and tested in accordance with ASTM E 84 and the mounting method of ASTM E 2231) are properly covered by the International Mechanical Code, so that this need not be repeated.

There is no requirement for listing in this proposal.

There are some differences between this comment and the original FS 195 proposal:

A more generic definition is being proposed here (less restrictive).

The reflective insulation referenced in sections 719.1 and 719.2 are also addressed.

There is no reference to a potential future ASTM standard mounting method.

This comment has received approval from the two industries that made the original proposals, namely the manufacturers of fire retardants (American Fire Safety Council, submitters of FS 148 and FS 149) and the manufacturers of reflective plastic core insulation (Reflective Insulation Manufacturers Association, submitters of FS 195). The proposed code wording in this comment was distributed through a variety of other stake holders, many of whom were lined up in February at Palm Springs in support of the proposal.

Final Hearing Results

FS149-07/08

AMPC

Code Change No: **FS153-07/08**

Original Proposal

Table 720.1(3)

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

Revise table as follows:

**TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS^{a,q}**

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	MINIMUM THICKNESS OF CEILING (inches)	
			2 hour	1 hour
23. Wood I-joint (minimum joist depth 9-1/4" with a minimum flange depth of 15/16" and a minimum flange cross sectional area of 2.3 square inches) at 24" o.c. spacing with 1x4 (nominal) wood furring strip spacer applied parallel to and covering the bottom of the bottom flange of each member, tacked in place. 2" mineral wool insulation, 3.5 pcf (nominal) installed adjacent to the bottom flange of the I-joint and supported by the 1x4 furring strip spacer.	23-1.1	1/2" deep single leg resilient channel 16" on center (channels doubled at wallboard end joints), placed perpendicular to the furring strip and joist and attached to each joist by 1-7/8" Type S drywall screws. 5/8" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered at least 4' and fastened with 1-1/8" Type S drywall screws spaced 7" on center. Wallboard joints to be taped and covered with joint compound		<u>5/8</u>
25. Wood I-joint (minimum I-joint depth 9-1/4" with a minimum flange depth of 1-1/2" and a minimum flange cross-sectional area of 5.25 square inches; minimum web thickness of 3/8") @ 24" o.c., 1-1/2" mineral fiber wool insulation (2.5 pcf - nominal) resting on hat-shaped furring channels.	25-1.1	Minimum 0.026" thick hat-shaped channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8" Type S drywall screws. 5/8" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1-1/8" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound.		Varies <u>5/8</u>
26. Wood I-joint (minimum I-joint depth 9-1/4" with a minimum flange depth of 1-1/2" and a minimum flange cross-sectional area of 5.25 square inches; minimum web thickness of 7/16") @ 24" o.c., 1-1/2" mineral fiber wool insulation (2.5 pcf - nominal) resting on resilient channels.	26-1.1	Minimum 0.019" thick resilient channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8" Type S drywall screws. 5/8" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound.		Varies <u>5/8</u>
27. Wood I-joint (minimum I-joint depth 9-1/4" with a minimum flange thickness of 1-1/2" and a minimum flange cross-sectional	27-1.1	Two layers of 1/2" Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer		Varies <u>1</u>

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	MINIMUM THICKNESS OF CEILING (inches)	
area of 2.25 square inches; minimum web thickness of 3/8") @ 24" o.c.		is fastened with 1-5/8" Type S drywall screws spaced 12" o.c. and the face layer is fastened with 2" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. on the edges. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. Face layer to also be attached to base layer with 1-1/2" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.		
28. Wood I-joist (minimum I-joist depth 9-1/2" with a minimum flange depth of 1-5/16" and a minimum flange cross-sectional area of 1.95 square inches; minimum web thickness of 3/8") @ 24" o.c.	28-1.1	Minimum 0.019" thick resilient channel 16" o.c.(channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8" Type S drywall screws. Two layers of 1/2" Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1-1/4" Type S drywall screws spaced 12" o.c. and the face layer is fastened with 1-5/8" Type S drywall screws spaced 12" o.c. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. Face layer to also be attached to base layer with 1-1/2" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.		Varies 1
29. Wood I-joist (minimum I-joist depth 9-1/4" with a minimum flange depth of 1-1/2" and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of 3/8") @ 24" o.c. with hat-shaped channels supporting the middle and face layers of gypsum wallboard. Unfaced fiberglass insulation is installed between the I-joists supported on the upper surface of the flange by stay wires spaced 12" o.c.	29-1.1	Base layer of 5/8" Type C gypsum wallboard attached directly to I-joists with 1-5/8" Type S drywall screws spaced 12" o.c. with ends staggered. Minimum 0.0179" thick resilient hat-shaped 7/8-inch furring channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8" Type S drywall screws after the base layer of gypsum wall board has been applied. The middle and face layers of 5/8" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered. The middle layer is fastened with 1" Type S drywall screws spaced 12" o.c. The face layer is applied parallel to the middle layer but with the edge joints offset 24" from those of the middle layer and fastened with 1-5/8" Type S drywall screws 8" o.c. The joints shall be taped and covered with joint compound.	2-3/4	Varies
30. Channel-shaped 18 gauge steel joists (minimum depth 8") spaced a maximum 24" o.c.	30-1.1	Base layer 5/8" Type X gypsum board applied perpendicular to bottom of framing members with 1-1/8" Type S-12	3-3/8	

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	MINIMUM THICKNESS OF CEILING (inches)	
supporting tongue-and-groove wood structural panels (nominal minimum 3/4" thick) applied perpendicular to framing members. Structural panels attached with 1-5/8" Type S-12 screws spaced 12" o.c.		screws spaced 12" o.c. Second layer 5/8" Type X gypsum board attached perpendicular to framing members with 1-5/8" Type S-12 screws spaced 12" o.c. Second layer joints offset 24" from base layer. Third layer 5/8" Type X gypsum board attached perpendicular to framing members with 2-3/8" Type S-12 screws spaced 12" o.c. Third layer joints offset 12" from second layer joints. Hat-shaped 7/8-inch rigid furring channels applied at right angles to framing members over third layer with two 2-3/8" Type S-12 screws at each framing member. Face layer 5/8" Type X gypsum board applied at right angles to furring channels with 1-1/8" Type S screws spaced 12" o.c.		

(Portions of table not shown remain unchanged)

Reason: The changes are proposed to make technical improvements to the assemblies in Table 720.1(3) and to also make them more consistent with the data in Proposal FS148-04/05-AS, which is the origin of the assemblies.

"Mineral fiber" is changed to "mineral wool" in the column for floor or roof construction at Assemblies 25-1.1 and 26-1.1 because corresponding Diagrams #25 and #26 from FS148-04/05 specify mineral wool. Refer to Item #3 in each of the diagrams.

"Resilient channel" is changed to "hat-shaped 7/8-inch furring channel" in the column for ceiling construction at Assembly 29-1.1 because corresponding Diagram #29 from FS148-04/05 specifies hat-shaped furring channel. Refer to Item #5 of the diagram. The columns for minimum ceiling thickness are also changed from 1-hour to 2-hour assemblies because Diagram #29 specifies a 2-hour, not a 1-hour, fire-resistance rating.

"Varies" is changed to actual thickness in the columns for minimum ceiling thickness because the ceiling thicknesses do not vary in these cases. For Assemblies 23-1.1 and 25-1.1 through 28-1.1, the thickness equals the thickness of gypsum board. For Assembly, 29-1.1, the thickness equals the thickness of the furring channel plus the gypsum board (3 x 5/8 + 7/8).

The language on hat-shaped channels is deleted from the column for floor or roof construction at Assembly 29-1.1 because the channels are between the layers of gypsum board at the ceiling and are not part of the floor or roof construction.

A height of 7/8-inch is added in the column for floor or roof construction at Assembly 30-1.1 because the ceiling thickness of 3-3/8 inch specified in the current 2006 IBC matches the thickness of the gypsum board plus 7/8-inch channels (4 x 5/8 + 7/8).

"Furring" is added to the column for floor or roof construction at Assembly 25-1.1 because corresponding Diagram #25 from FS148-04/05 specifies hat-shaped furring channels. Refer to Item #5 of the diagram.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the changes in ceiling thickness and terminologies within Table 720.1(3) were appropriate based on industry practices.

Assembly Action:

None

Final Hearing Results

FS153-07/08

AS

Code Change No: FS154-07/08

Original Proposal

Sections: 721.2.4.1, 721.4.1.1 (New), 721.2.4.1.2 (New), 721.2.4.2, 721.2.4.3 (New), 721.2.4.5

Proponent: Joseph J. Messersmith, Jr, PE, Portland Cement Association; Daniel Falconer, PE, American Concrete Institute

Revise as follows:

721.2.4 Concrete columns. Concrete columns shall comply with this section.

721.2.4.1 Minimum size. The minimum overall dimensions of reinforced concrete columns for fire-resistance ratings of 1 hour to 4 for exposure to fire on all sides hours shall comply with Table 721.2.4 this section.

721.2.4.1.1 Concrete strength less than or equal to 12,000 psi. For columns made with concrete having a specified compressive strength, f'_c , of less than or equal to 12,000 psi (82.7 MPa), the minimum dimension shall comply with Table 721.2.4.

721.2.4.1.2 Concrete strength greater than 12,000 psi. For columns made with concrete having a specified compressive strength, f'_c , greater than 12,000 psi (82.7 MPa), for fire-resistance ratings of 1 hour to 4 hours the minimum dimension shall be 24 inches (610 mm).

721.2.4.2 Minimum cover for R/C columns. The minimum thickness of concrete cover to the main longitudinal reinforcement in columns, regardless of the type of aggregate used in the concrete and the specified compressive strength of concrete, f'_c , shall not be less than 1 inch (25 mm) times the number of hours of required fire resistance or 2 inches (51 mm), whichever is less.

721.2.4.3 Tie and spiral reinforcement. For concrete columns made with concrete having a specified compressive strength, f'_c , greater than 12,000 psi (82.7 MPa), tie and spiral reinforcement shall comply with the following:

1. The free ends of rectangular ties shall terminate with a 135-degree standard tie hook.
2. The free ends of circular ties shall terminate with a 90-degree standard tie hook.
3. The free ends of spirals, including at lap splices, shall terminate with a 90-degree standard tie hook.

The hook extension at the free end of ties and spirals shall be the larger of six bar diameters and the extension required by Section 7.1.3 of ACI 318. Hooks shall project into the core of the column.

(Renumber subsequent sections)

Reason: The proposal updates the column requirements based on new provisions in ACI 216.1-07/TMS 0216.1-07, *Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, the successor to ACI 216.1-97/TMS 0216.1-97, which is presently referenced in Section 721.1 of the IBC. Coordinating provisions within the IBC and those of reference standards, on which the IBC's provisions are based, is desirable to avoid confusion among the various users. The intent of the new provisions is to prevent ties or spirals from disengaging from the longitudinal reinforcement should the concrete cover over the ties or spirals be lost during a fire. The proposal expands on the provisions found in ACI 216.1/TMS 0216.1 by addressing spiral reinforcement, which is typically used for lateral reinforcement in round columns.

A separate proposal updates the reference to the new edition of the standard.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the proposal updates the column requirements based on new provisions in ACI 216.1-07/TMS 0216.1-07, *Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, which is presently referenced in Section 721.1 of the IBC.

Assembly Action:

None

Final Hearing Results

FS154-07/08

AS

Code Change No: **FS155-07/08**

Original Proposal

Sections: 602.4.7, 721.2, 721.3

Proponent: Sarah A. Rice, Schirmer Engineering Corporation

Revise as follows:

602.4.7 Exterior structural members. Where a ~~horizontal~~ fire separation distance of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes shall be permitted to be used externally.

721.2.1.4.3 Nonsymmetrical assemblies. For a wall having no finish on one side or different types or thicknesses of finish on each side, the calculation procedures of Sections 721.2.1.4.1 and 721.2.1.4.2 shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values.

Exception: For an exterior wall with ~~more~~ a fire separation distance greater than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.3.2.3 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values calculated.

Exception: For exterior walls with ~~more~~ a fire separation distance greater than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.4.1.4 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side to be the fire-exposed side of the wall. The fire resistance of the wall shall not exceed the lower of the two values determined.

Exception: For exterior walls with ~~more~~ a fire separation distance greater than 5 feet (1524 mm) of horizontal separation, the fire shall be assumed to occur on the interior side only.

721.6.2.3 Exterior walls. For an exterior wall ~~having more~~ with a fire separation distance greater than 5 feet (1524 mm) of horizontal separation, the wall is assigned a rating dependent on the interior membrane and the framing as described in Tables 721.6.2(1) and 721.6.2(2). The membrane on the outside of the nonfire-exposed side of exterior walls ~~having more~~ with a fire separation distance greater than 5 feet (1524 mm) of horizontal separation may consist of sheathing, sheathing paper, and siding as described in Table 721.6.2(3).

Reason: The term 'fire separation distance' is defined in 702. The term is most clearly used in Table 602 to determine fire resistance rating of exterior walls based on distance to property lines. It is used in over 40 other places in the code to describe that horizontal distance. These 5 sections currently use the term horizontal separation when the intent of the sections is fire separation distance. The use of the phrase Horizontal separation in these sections is incorrect and could be confused by users as meaning something other than the fire separation distance. The intent of the change is to promote editorial consistency.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the use of the phrase "horizontal separation" in these sections is incorrect and could be confused by users as meaning something other than the fire separation distance; therefore replacing these terms with "fire separation distance" is appropriate.

Assembly Action:

None

Final Hearing Results

FS155-07/08

AS

Code Change No: **FS156-07/08**

Original Proposal

Table 721.1.4(1)

Proponent: Joseph J. Messersmith, Jr., PE, Portland Cement Association; Daniel Falconer, PE, American Concrete Institute

Revise table as follows:

TABLE 721.2.1.4(1)
MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF
CONCRETE OR CONCRETE MASONRY WALLS

TYPE OF FINISH APPLIED TO <u>CONCRETE OR CONCRETE MASONRY WALL</u>	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate <u>Concrete Masonry: siliceous or calcareous gravel</u>	Concrete: sand lightweight concrete <u>Concrete Masonry: limestone, cinders or unexpected slag</u>	Concrete: lightweight concrete <u>Concrete Masonry: expanded shale, clay or slate</u>	<u>Concrete Masonry: pumice, or expanded slag</u>
Portland cement-sand plaster	1.00	0.75 ^a	0.75 ^a	0.50 ^a
Gypsum-sand plaster or gypsum wallboard	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.50	1.25
<u>Gypsum wallboard</u>	<u>3.00</u>	<u>2.25</u>	<u>2.25</u>	<u>2.25</u>

For SI: 1 inch = 25.4 mm.

- a. For portland cement-sand plaster 5/8 inch or less in thickness and applied directly to the concrete or concrete masonry on the nonfire-exposed side of the wall, the multiplying factor shall be 1.00.

Reason: The proposal updates the multiplying factor for gypsum wallboard based on values in ACI 216-97/TMS 0216-97, *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, which is referenced in Section 721.1 of the IBC, and the successor to that standard, ACI 216.1-07/TMS 0216.1-07, *Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*. The same multiplying factors for gypsum wallboard also appear in ASCE 29-05, *Standard Calculation Methods for Structural Fire Protection*, which is also referenced in Section 721.1 of the IBC. Coordinating provisions within the IBC and those of reference standards covering the same subject is desirable to avoid confusion among the various users.

Other changes are editorial to make it clear that the factors are applicable to finishes applied to concrete and concrete masonry walls, provide internal coordination within the table and to make it easier to differentiate between aggregates used in concrete and those used in concrete masonry units.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

TABLE 721.2.1.4(1)
MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF
CONCRETE OR CONCRETE MASONRY WALLS

TYPE OF FINISH APPLIED TO CONCRETE OR CONCRETE MASONRY WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate Concrete Masonry: siliceous or calcareous gravel	Concrete: sand lightweight concrete Concrete Masonry: limestone, cinders or unexpected slag	Concrete: lightweight concrete Concrete Masonry: expanded shale, clay or slate	Concrete Masonry: pumice, or expanded slag
Portland cement-sand plaster	1.00	0.75 ^a	0.75 ^a	0.50 ^a
Gypsum-sand plaster	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.50 1.25	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm.

- a. For portland cement-sand plaster 5/8 inch or less in thickness and applied directly to the concrete or concrete_masonry on the nonfire-exposed side of the wall, the multiplying factor shall be 1.00.

Committee Reason: The committee agreed that the proposal appropriately updates the multiplying factor for gypsum wallboard based on values in ACI 216-97/TMS 0216-97, *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, which is referenced in Section 721.1 of the IBC. The modification revised the multiplying factor for lightweight concrete with a gypsum-vermiculite or perlite plaster finish from 1.5 to 1.25 for consistency with ACI 216-97/TMS 0216-97.

Assembly Action:

None

Final Hearing Results

FS156-07/08

AM

Code Change No: **FS157-07/08**

Original Proposal

Table 721.2.1.4(1)

Proponent: James C. Gerren, Clark County Department of Development Services, NV

Revise table as follows:

TABLE 721.2.1.4(1)
MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF WALL

TYPE OF FINISH APPLIED TO MASONRY WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate Masonry: siliceous or carbonate; calcareous gravel solid clay brick	Concrete: sand-lightweight concrete Masonry: limestone, cinders or unexpanded slag, clay tile; hollow clay brick; concrete masonry units of expanded shale and <20% sand	Concrete: lightweight concrete Masonry: concrete masonry units of expanded shale, expanded clay, expanded slag, or slate pumice < 20% sand	Concrete: pumice, or expanded slag Masonry: concrete masonry units of expanded slag, expanded clay, or pumice
Portland cement-sand plaster	1.00	0.75 ^a	0.75 ^a	0.50 ^a
Gypsum-sand plaster or gypsum wallboard	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.50 1.25	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm

- a. For Portland cement-sand plaster 5/8 inch or less in thickness and applied directly to the concrete or masonry on the non-fire-exposed side of the wall, the multiplying factor shall be 1.00.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Reason: The purpose of this proposal is to revise IBC Table 721.2.1.4(1) to be consistent with Table 5.1 of ACI 216.1-97, *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005, *Standard Calculation Methods for Structural Fire Protection*.

Currently, IBC Sections 721.2.1.4.1 and 721.3.2.1 reference Table 721.2.1.4(1) for the multiplying factors for finishes on the non-fire-exposed side of concrete or concrete masonry walls, respectively. The factors in Table 721.2.1.4(1) are used as part of a calculation method to determine the fire-resistance rating of concrete or concrete masonry walls with finishes of gypsum wallboard or plaster applied to one or both sides of the wall. However, the version of Table 721.2.1.4(1) currently provided in the IBC contains several errors, including:

1. The multiplying factors for gypsum wallboard finishes are lumped together with the factors listed for gypsum-sand plaster. This is a mistake in Table 721.2.1.4(1) that has no technical justification. Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005 all identify separate multiplying factors for gypsum wallboard. The proposed revision to Table 721.2.1.4(1) would correct this mistake and make the multiplying factors for gypsum wallboard in Table 721.2.1.4(1) consistent with Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005.
2. The multiplying factor indicated in Table 721.2.1.4(1) for gypsum-vermiculite or perlite plaster finish applied to lightweight concrete or concrete masonry units of expanded shale, expanded clay, or pumice less than 20% sand is liberally incorrect. Specifically, the multiplying factor is currently provided as 1.50, but should be 1.25, as it is in Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005. Please note that without this correction, the factors in columns 3 and 4 of Table 721.2.1.4(1) are identical and could be merged. However, the separate columns are needed because they are supposed to have different multiplying factors for gypsum-vermiculite or perlite plaster finishes.
3. Column 5 of the current version of Table 721.2.1.4(1) incorrectly references concrete only (i.e., does not reference masonry). However, the intent of the factors in column 5 is to apply to masonry only, not concrete. Specifically, the factors in column 5 are intended to apply to concrete masonry units of expanded slag, expanded clay, or pumice. Please note that the factors provided in column 5 of IBC Table 721.2.1.4(1) are not even used in Table 5.1 of ACI 216.1-97. Instead, these factors are provided in Table 4-2 (masonry), but not Table 2-2 (concrete), of ASCE/SFPE 29-2005. The proposed revision would make IBC Table 721.2.1.4(1) consistent with Table 4-2 of ASCE/SFPE 29-2005.
4. The current column headings in IBC Table 721.2.1.4(1) are vague and inconsistent with Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005. The proposed revisions to the column headings would eliminate potential interpretive issues and make Table 721.2.1.4(1) consistent with Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005.

Since IBC Section 721.1 permits the calculated fire resistance of concrete, concrete masonry, and clay masonry assemblies to be in accordance with ACI 216.1-97, it is necessary to revise IBC Table 721.2.1.4(1) to make it consistent with Table 5.1 of ACI 216.1-97. In addition, the proposed revisions would make IBC Table 721.2.1.4(1) consistent with Tables 2-2 and 4-2 of ASCE/SFPE 29-2005, which is an industry standard regarding calculation methods for structural fire protection.

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

Public Hearing Results

Committee Action:

Approved as Modified

**TABLE 721.2.1.4(1)
MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF WALL**

TYPE OF FINISH APPLIED TO WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate Masonry: siliceous or carbonate; solid clay brick	Concrete: sand-lightweight Masonry: clay tile; hollow clay brick; concrete masonry units of expanded shale and <20% sand	Concrete: lightweight Masonry: concrete masonry units of expanded shale, expanded clay, expanded slag, or pumice < 20% sand	Masonry: concrete masonry units of expanded slag, expanded clay, or pumice
Portland cement-sand plaster	1.00	0.75 ^a	0.75 ^a	0.50 ^a
Gypsum-sand plaster	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.25	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm

- a. For Portland cement-sand plaster 5/8 inch or less in thickness and applied directly to the concrete or concrete masonry on the non-fire-exposed side of the wall, the multiplying factor shall be 1.00.

Committee Reason: The committee agreed that the proposal appropriately updates the multiplying factor for gypsum wallboard based on values in ACI 216-97/TMS 0216-97, *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, which is referenced in Section 721.1 of the IBC, and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005, *Standard Calculation Methods for Structural Fire Protection*. The modification adds clarification to the footnote that it is concrete masonry that is the specified material.

Assembly Action:

None

Final Hearing Results

FS157-07/08

AM

Code Change No: **FS158-07/08**

Original Proposal

Section: 721.3.1.1, Table 721.3.2

Proponent: Jason Thompson, PE, National Concrete Masonry Association (NCMA), representing Masonry Alliance for Codes and Standards (MACS)

Revise as follows:

721.3.1.1 Concrete masonry unit plus finishes. The equivalent thickness of concrete masonry assemblies, T_{ea} , shall be computed as the sum of the equivalent thickness of the concrete masonry unit, T_e , as determined by Section 721.3.1.2, 721.3.1.3, or 721.3.1.4, plus the equivalent thickness of finishes, T_{ef} , determined in accordance with Section 721.3.2:

$$T_{ea} = T_e + T_{ef} \quad \text{(Equation 7-6)}$$
~~$$T_e = V_n / LH = \text{Equivalent thickness of concrete masonry unit (inch) (mm).}$$~~

where:

~~V_n = Net volume of masonry unit (inch³) (mm³).~~
 ~~L = Specified length of masonry unit (inch) (mm).~~
 ~~H = Specified height of masonry unit (inch) (mm).~~

TABLE 721.3.2
MINIMUM EQUIVALENT THICKNESS (inches)
OF BEARING OR NONBEARING CONCRETE MASONRY WALLS^{a,b,c,d}

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm.

- a. Values between those shown in the table can be determined by direct interpolation.
- b. Where combustible members are framed into the wall, the thickness of solid material between the end of each member and the opposite face of the wall, or between members set in from opposite sides, shall not be less than 93 percent of the thickness shown in the table.
- c. Requirements of ASTM C 55, ASTM C 73, ~~or~~ ASTM C 90, or ASTM C 744 shall apply.
- d. Minimum required equivalent thickness corresponding to the hourly fire-resistance rating for units with a combination of aggregate shall be determined by linear interpolation based on the percent by volume of each aggregate used in manufacture.

Reason: Section 721.3.1.2 requires that the equivalent thickness of a concrete masonry unit be determined in accordance with ASTM C 140. This is consistent with the method of determining the equivalent thickness in accordance with the reference standard ACI 216.1/TMS 0216, upon which these provisions are based. Section 721.3.1.1, however, also includes an alternative method of calculating the equivalent thickness of a concrete masonry unit that may result in a value different than that determined through standardized procedures. This change proposal removes the alternative method of calculating the equivalent thickness for consistency and clarity.

Footnote c in Table 721.3.2 is modified to introduce concrete masonry units complying with the requirements of ASTM C 744, consistent with the reference standard ACI 216.1/TMS 0216. The physical properties of ASTM C 744 concrete masonry units must comply with either ASTM C 55, C 73, or C 90, depending upon the unit configuration and application.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this change appropriately removes the alternative method of calculating the equivalent thickness provided in Section 721.3.1.1 that may result in a value different than that determined through standardized procedures. Further, footnote c in

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Table 721.3.2 has been appropriately modified to introduce concrete masonry units complying with the requirements of ASTM C 744, consistent with the reference standard ACI 216.1/TMS 0216.

Assembly Action:

None

Final Hearing Results

FS158-07/08

AS

Code Change No: FS159-07/08

Original Proposal

Table 721.6.2(3)

Proponent: Matthew Dobson, Vinyl Siding Institute

Revise table as follows:

**TABLE 721.6.2(3)
MEMBRANE^a ON EXTERIOR FACE OF WOOD STUD WALLS**

SHEATHING	PAPER	EXTERIOR FINISH
5/8-inch T & G lumber 5/16-inch exterior glue wood structural panel ½-inch gypsum wallboard 5/8-inch gypsum wallboard ½-inch fiberboard	Sheathing paper	Lumber siding Wood shingles and shakes ¼-inch wood structural panels—exterior type ¼-inch hardboard Metal siding Stucco on metal lath Masonry veneer Vinyl Siding
None	—	3/8-inch exterior-grade wood structural panels

For SI: 1 pound/cubic foot = 16.0185 kg/m³.

a. Any combination of sheathing, paper and exterior finish is permitted.

Reason: Vinyl siding has no negative impact on the performance ability of a fire rated assemblies. This section of the code simply provides a method of specify a fire rated assembly through the use of certain product that have been given certain performance a ability. The exterior finish component to these assemblies under this section does not provide any additional performance. This will enable the building official to understand that vinyl siding can be applied with these assemblies without any effect to the fire rating.

Vinyl siding is accepted in numerous fire rated assemblies and is well recognized for not contributing to the growth of a fire or creating any undue hazard.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that based on the exterior finishes already allowed in Table 721.6.2(3), the addition of vinyl siding would be appropriate.

Assembly Action:

None

Final Hearing Results

FS159-07/08

AS

Code Change No: FS160-07/08

Original Proposal

Chapter 7; IFC Chapter 7

Proponent: Bill McHugh, Firestop Contractors International Association

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IFC CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES

PART I – IBC FIRE SAFETY

Revise chapter title as follows:

CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION
FIRE AND SMOKE PROTECTION FEATURES

PART II – IFC

Revise chapter title as follows:

CHAPTER 7
FIRE-RESISTANCE-RATED CONSTRUCTION
FIRE AND SMOKE PROTECTION FEATURES

Reason: Fire and smoke protection features better reflects the purpose of this chapter. Fire resistance is very one dimensional, while the chapter demands much more than simple fire resistance, including structural fire resistance, firestop systems that protect for fire and smoke, fire, smoke and fire/smoke dampers that protect against fire and smoke, fire doors, fire rated glazing, etc. Additionally, a fire protection feature may provide sound protection in addition to fire and smoke. Therefore, fire and smoke protection features fits the chapter better.

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Modified

Modify the proposal as follows:

CHAPTER 7
FIRE AND SMOKE PROTECTION FEATURES

Committee Reason: The committee agreed that the proposed title better reflects the purpose of Chapter 7. The modification was to correct a spelling error.

Assembly Action:

None

PART II – IFC

Committee Action:

Disapproved

Committee Reason: The current chapter title is preferred and avoids potential confusion with the current title of Chapter 9. Also, a change could be premature since the ICC Code Technology Committee Fire Safety study group is currently working on a re-write of Chapter 7 which could include a title revision.

Assembly Action:

None

Final Hearing Results

FS160-07/08, Part I
FS160-07/08, Part II

AM
D

Code Change No: **FS163-07/08****Original Proposal**

Sections: 803.1.4, 803.9, 803.11.2, 2603.4.1.2

Proponent: Philip Brazil, PE, Reid Middleton, Inc., representing himself

Revise as follows:

803.1.4 (Supp) 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 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.

TABLE 803.9 (Supp)
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY^k

- I. Applies when the exit enclosures, exit passageways, corridors or rooms and enclosed spaces are protected by a an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

(Portions of table and footnotes not shown remain unchanged)

803.11.2 (Supp) 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 803.11.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used except 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, or attached to noncombustible backing or furring strips installed as specified in Section 803.11.1. The hangers and assembly members of such dropped ceilings that are below the main ceiling line shall be of noncombustible materials, except that in Type III and V construction, fire-retardant-treated wood shall be permitted. The construction of each set-out wall shall be of fire-resistance-rated construction as required elsewhere in this code.

2603.4.1.2 Cooler and freezer walls. Foam plastic installed in a maximum thickness of 10 inches (254 mm) in cooler and freezer walls shall:

1. Have a flame spread index of 25 or less and a smoke-developed index of not more than 450, where tested in a minimum 4 inch (102 mm) thickness.
2. Have flash ignition and self-ignition temperatures of not less than 600°F and 800°F (316°C and 427°C), respectively.
3. Have a covering of not less than 0.032-inch (0.8 mm) aluminum or corrosion-resistant steel having a base metal thickness not less than 0.0160 inch (0.4 mm) at any point.
4. Be protected by an automatic sprinkler system in accordance with Section 903.3.1.1. Where the cooler or freezer is within a building, both the cooler or freezer and that part of the building in which it is located shall be sprinklered.

Reason: The changes are proposed for consistency with the use of “automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 (where applicable)” elsewhere in the 2006 IBC and 2007 IBC Supplement. These are virtually the only instances in the 2006 IBC or 2007 IBC Supplement where consistency is lacking.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the changes are necessary for consistency with the use of “automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 (where applicable)” elsewhere in the 2006 IBC and 2007 IBC Supplement

Assembly Action:

None

Final Hearing Results

FS163-07/08

AS

Code Change No: **FS164-07/08**

Original Proposal

Section: 803.1.4, Chapter 35 (New)

Proponent: Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

1. Revise as follows:

803.1.4 (Supp) 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 automatic sprinklers 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.

2. Add new standard to Chapter 35 as follows:

ASTM

E 2404-06Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Vinyl Wall or Ceiling Coverings to Assess Surface Burning Characteristics

Reason: This proposal recommends that a standard practice be referenced for testing textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings in the Steiner tunnel test, ASTM E 84. The committee on fire standards, ASTM E05, developed a standard practice, entitled **Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Vinyl Wall or Ceiling Coverings to Assess Surface Burning Characteristics**, specifically for a mandatory way of preparing test specimens and mounting them in the tunnel. This replaces optional guidance on mounting methods found in the Appendix of ASTM E 84 and ensures testing consistency.

This proposal also corrects a typo, by adding the missing word vinyl.

Cost Impact: This proposal should not increase the cost of construction.

Public Hearing Results

Note: The following analysis was not in the Code Change Proposal book but was posted on the ICC website.

Analysis: Review of proposed new standard ASTM E2404-06 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the proposed test method, ASTM E2404, was the appropriate test method because it deals specifically with textile, paper or vinyl wall or ceiling coverings.

Assembly Action:

None

Final Hearing Results

FS164-07/08

AS

Code Change No: **FS165-07/08**

Original Proposal

Sections: 803.9 (New); IFC 803.8 (New)

Proponent: Jim Lathrop, Koffel Associates, Inc., representing Bobrick

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IFC CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Add new text as follows:

803.9 High Density Polyethylene (HDPE). Where high density polyethylene is used as an interior finish it shall comply with Section 803.1.2. (Supp)

(Renumber subsequent sections)

PART II – IFC

Add new text as follows:

803.8 High Density Polyethylene (HDPE). Where high density polyethylene is used as an interior finish it shall comply with Section 803.1.2. (Supp) of the IBC

Reason: HDPE is a thermoplastic that when it burns gives off considerable energy and produces a pooling flammable liquids fire. Recent full scale room-corner tests using NFPA 286 have demonstrated a significant hazard. These tests had to be terminated prior to the standard 15 minute duration due to flashover occurring, yet there was still much of the product left to burn. Extensive flammable liquid pool fires occurred during the tests. Yet this same material when tested in accordance with the tunnel test, ASTM E-84, is often given a FSI of 25 or less. However the resulting test is so intense some labs will not test HDPE partitions in their tunnel due to the damage it can do to the tunnel. This proposal will assure that when using HDPE partitions they will be formulated in such a manner to reduce the hazard that they present. Following is some of the data from one of the NFPA 286 tests: Peak HRR (excl burner) 1733 kW; Total Heat Released (excl. burner) 121 MJ; Peak Heat Flux to the floor 35.2 kW/m²; Peak Avg Ceiling Temp 805°C, 1481°F

Cost Impact: NFPA 286 is a more expensive test than is ASTM E-84 however it yields usable data that ASTM E-84 does not, and the test arrangement is more representative of how the product is used.

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Modified

Modify the proposal as follows:

803.9 High Density Polyethylene (HDPE). Where high density polyethylene is used as an interior finish it shall comply with the requirements of Section 803.1.2. (Supp)

Committee Reason: The committee agreed that these products are being used and there performance is critical to public health and safety; therefore these products should be regulated and this proposal is appropriate. The modification results in more enforceable language.

Assembly Action:

None

PART II – IFC

Committee Action:

Approved as Submitted

Committee Reason: This change identifies a known interior finish hazard, provides retroactive regulation of it and is consistent with the action taken by the IBC-FS Committee.

Assembly Action:

None

Final Hearing Results

F165-07/08, Part I	AM
F165-07/08, Part II	AS

Code Change No: FS167-07/08

Original Proposal

Sections: 803.9 (New), 202 (New), Chapter 35 (New)

Proponent: Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

1. Add new text as follows:

803.9 Site-fabricated stretch systems. Where used as interior wall or interior ceiling finish materials, site-fabricated stretch systems 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.

(Renumber subsequent sections)

2. Add new definition as follows:

Site-fabricated stretch system. A system, fabricated on site and intended for acoustical, tackable or aesthetic purposes, that is comprised of three elements: (a) a frame (constructed of plastic, wood, metal or other material) used to hold fabric in place, (b) a core material (infill, with the correct properties for the application), and (c) an outside layer, comprised of a textile, fabric or vinyl, that is stretched taut and held in place by tension or mechanical fasteners via the frame.

3. Add new standard to Chapter 35 as follows:

ASTM

<u>E 2573-07</u>	<u>Standard Practice for Specimen Preparation and Mounting of Site-Fabricated Stretch Systems to Assess Surface Burning Characteristics</u>
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Reason: The ASTM committee on fire standards, ASTM E05, has issued a standard practice, ASTM E 2573, Standard practice for specimen preparation and mounting of site-fabricated stretch systems. Until now there was no correct mandatory way to test these systems. These systems are now being used extensively because they can stretch to cover decorative walls and ceilings with unusual looks and shapes. The systems consist of three parts: a fabric (or vinyl), a frame and an infill core material. The testing has often been done of each component separately instead of testing the composite system. That is an inappropriate way to test and not the safe way to conduct the testing. Now that a consensus standard method of testing exists, the code should recognize it. The proposed definition was taken from the standard, ASTM E 2573, word for word.

This type of product is not exclusive to any individual manufacturer. Three examples, taken from different manufacturers, are shown as illustrations.



Cost Impact: This code change proposal should not increase the cost of construction.

Public Hearing Results

Note: The following analysis was not in the Code Change Proposal book but was posted on the ICC website.

Analysis: Review of proposed new standard ASTM E2573-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that site-fabricated stretch systems are now being used extensively and that since a standard has been developed to deal with the mounting of such systems to determine surface burning characteristics (ASTM E2573), the systems should be regulated in the code.

Assembly Action:

None

Final Hearing Results

FS167-07/08

AS

Code Change No: FS168-07/08

Original Proposal

Section: 803.11.4

Proponent: Douglas H. Evans, PE, Clark County, NV, representing Department of Development Services

Revise as follows:

803.11.4 (Supp) Materials. An interior wall or ceiling finish that is not more than 0.25 inch (6.4 mm) thick shall be applied directly against a noncombustible backing.

Exceptions:

1. ~~Class A materials, in accordance with Section 803.1.1 or 803.1.2.~~ Non-combustible materials.
2. Materials where the qualifying tests were made with the material suspended or furred out from the noncombustible backing.

Reason: Taking into account how the E 84 test is performed, this code allowance has no basis in physics. Most thin combustible materials take on the burning characteristics of their substrate. In the E 84 furnace, thin combustible materials are held in place with chicken wire on top of one-quarter inch metal rods two feet on center down the length of the furnace. As tested, the substrate is the noncombustible lid of the furnace. The fire dynamics issue has to do with mass to surface burning ratio. The more surface, and less mass, exposed to oxygen and heat, the more apt a material is to burn (dust explosions are one example). As such, many thin combustible materials can obtain a Class A rating, but may readily burn when they have no substrate and are exposed to an ignition source. The paper on drywall is one such example.

An additional concern is the potential for adverse interaction with sprinklers. If a fire originates between four heads, when the heat plume impinges on the thin combustible ceiling, there is no assurance that sprinklers in the plane of the membrane will activate prior to the membrane deteriorating. If the membrane degrades from the heat, the heat will enter the void above the membrane and the sprinklers protecting the void will activate. Sprinklers above the membrane will then pre-wet the membrane and the sprinkler piping penetrating the membrane. This situation may allow the fire to spread below the membrane.

Cost Impact: It is unlikely this subject impacts most interior finish installations, but for those impacted, the cost of construction will increase.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the term "non-combustible" was more appropriate for exception #1 to Section 803.11.4 based on the fact that some materials that can qualify as Class A materials really are not intended to be under the scope of this exception because they may readily burn if not installed on a noncombustible backing.

Assembly Action:

None

Final Hearing Results

FS168-07/08

AS

Code Change No: FS169-07/08

Original Proposal

Section: 804.4.1

Proponent: Tom Lariviere, Fire Department, Madison, MS, representing Joint Fire Service Review Committee

Revise as follows:

804.4.1 Minimum critical radiant flux. Interior floor finish and floor covering materials in exit enclosures, exit passageways and corridors shall not be less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2 and S. In all areas, floor covering materials shall comply with the DOCFF-1 “pill test” (CPSC 16 CFR, Part 1630).

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required, and materials complying with the DOC FF-1 “pill test” (CPSC 16 CFR, Part 1630) are permitted in any area where Class II materials are required.

Reason: This proposal requires a fire rating for floor covering materials in I-1 occupancies. In Group I-1 occupancies clients/patients are located for over 24 hours and this will provide a higher level of safety for these facilities and provide consistency between the IBC and Federal Regulations.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that Group I-1 occupancies should be required to have minimum critical radiant flux of Class I for floor finishes and floor coverings in exit enclosures, exit passageways and corridors based on similar levels of hazards associated with other Groups that are currently required to meet Class I (I-2, I-3). This will also provide consistency between the IBC and Federal Regulations.

Assembly Action:

None

Final Hearing Results

FS169-07/08

AS

Code Change No: FS171-07/08

Original Proposal

Section: 909.20.5

Proponent: Maureen Traxler, City of Seattle, WA, representing Department of Planning & Development; John H. Klote, John H. Klote, Inc.; Douglas H. Evans, Clark County, NV, representing Department of Development Services; Assistant Chief Kenneth L. Tipler, Fire Marshall, City of Seattle, WA, representing Seattle Fire Department

Revise as follows:

909.20.5 Stair pressurization alternative. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the vestibule is not required, provided that interior exit stairways are pressurized to a minimum of 0.15 0.10 inches of water (37 25 Pa) and a maximum of 0.35 inches of water (87 Pa) in the shaft relative to the building measured with all stairway doors closed under maximum anticipated ~~stack pressures~~ conditions of stack effect and wind effect.

Reason: The proposal changes the minimum stair pressurization from 0.15 to 0.10 inches of water. This easing of the pressurization requirement will reduce the cost and complexity of pressurized stairs, while retaining the full protection of pressurized stairs. A pressure difference of 0.10 inches of water is sufficient to prevent smoke from infiltrating the stairs under the extreme condition of a fully-involved fire in the space next to the stair door. This is supported by both engineering analysis and full scale fire tests (see NFPA 92A 2006; Klote and Milke 2002).

While at NIST, Dr. John Klote did a series of full-scale fire tests at the Plaza Hotel Building in Washington, D.C. In these fires, the section of a corridor near the stairs was fully involved in fire. In these tests, a pressure difference of 0.10 inches controlled smoke from very large fires that were only a few feet away from the stairway door. Another test consisted of a room fire that flashed over and remained at fully-developed conditions for some time. A number of other full scale tests have confirmed that pressurization can control smoke from extremely large fires. These tests show that 0.10 inches of water is sufficient to control smoke with a flashed over fire anywhere on the floor even when it is in the corridor next to the stair door.

Cost Impact: This code change proposal will not increase the cost of construction.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: Based on recent research on stair pressurization the committee felt that changing the minimum stair pressurization from 0.15 to 0.10 inches of water was appropriate and that the phrase "conditions of stack effect and wind effect" more appropriately describe what stack pressures were.

Assembly Action:

None

Final Hearing Results

FS171-07/08

AS

Code Change No: FS172-07/08

Original Proposal

Section: 909.20.6.1

Proponent: Lee J. Kranz, City of Bellevue, representing The Washington Association of Building Officials (WABO), Technical Code Development Committee

Revise as follows:

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

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.
3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. Control wiring and power wiring utilizing a 2-hour rated cable or cable system.
2. Where incased with not less than 2" of concrete.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Reason: Smokeproof enclosure ventilation systems, including stair enclosures required to be pressurized in accordance with IBC Section 1020.1.7, must have pressurization equipment and ductwork protected to the same fire resistance rating as the shaft they serve per Section 909.20.6.1. This code change will help to insure the system will function properly in the event of a fire in order to maintain a tenable environment for safe means of egress. The proposed change clarifies that control wiring and power wiring serving the pressurization fan are critical equipment components that must also be protected to insure overall system viability. The exceptions are intended to allow listed 2 hour rated wiring and/or 2" of concrete coverage (as permitted in NEC Section 230.6) as an acceptable alternative to fire rated barriers

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the proposed change appropriately addresses control wiring and power wiring serving the pressurization fan that are critical equipment components that should also be protected. Further, the exceptions appropriately allow listed 2 hour rated wiring and/or 2" of concrete coverage as acceptable alternatives to fire rated barriers. This is consistent with requirements currently in the NFPA 70.

Assembly Action:

None

Final Hearing Results

FS172-07/08

AS

Code Change No: FS173-07/08

Original Proposal

Section: 1402.1

Proponent: Robert McCluer, RMc Code Consulting, representing Metal Construction Association

Revise definition as follows:

**SECTION 1402
DEFINITIONS**

METAL COMPOSITE MATERIAL (MCM) SYSTEM. An exterior wall ~~finish system~~ covering fabricated using MCM in a specific assembly including joints, seams, attachments, substrate, framing and other details as appropriate to a particular design.

Reason: The term exterior wall finish system is often associated only with the exterior insulation and finish systems (EIFS) that are commonly used as wall covering materials. A more proper reference to the defined term, Exterior Wall Covering, will avoid any confusion that may occur and the need to further specify what sections of the code apply to MCM.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the term exterior wall finish system is often associated only with the exterior insulation and finish systems (EIFS) that are commonly used as wall covering materials; therefore replacing "finish system" with "covering" in the definition of Metal Composite Material System is appropriate.

Assembly Action:

None

Final Hearing Results

FS173-07/08

AS

Code Change No: **FS175-07/08**

Original Proposal

Sections: 202, 1402, 1403.2, 1404.11 (New), 1408 (New), 1412.1 (New), Chapter 35; IRC 202, R703.9 through R703.9.4.2 (New), Chapter 43

Proponent: Jesse J. Beitel, Hughes Associates, representing the EIFS Industry Members Association

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY AND IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Add new definitions as follows:

SECTION 202 DEFINITIONS

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). See Section 1402.1

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. See Section 1402.1

SECTION 1402 DEFINITIONS

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). EIFS are nonstructural, non-load bearing, exterior wall cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. An EIFS that incorporates a means of drainage applied over a water-resistive barrier.

2. Revise as follows:

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. The exterior wall envelope 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 the *International Energy Conservation Code*.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.3, shall not be required for an exterior wall envelope 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 wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
 - 2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
 - 2.3. Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m²).
 - 2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.
3. Exterior Insulation and Finish System (EIFS) complying with Section 1408.4.1

3. Add new text as follows:

1404.11 Exterior Insulation and finish system. Exterior Insulation and Finish System (EIFS) shall comply with ASTM E 2568. Exterior Insulation and Finish System (EIFS) with Drainage shall comply with ASTM E 2568 and ASTM E 2273.

SECTION 1408
EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

1408.1 General. The provisions of this section shall govern the materials, construction and quality of Exterior Insulation and Finish Systems (EIFS) for use as exterior wall coverings in addition to other applicable requirements of Chapters 7, 14, 16, 17 and 26.

1408.2 Performance characteristics. EIFS shall be constructed such that it meets the performance characteristics required in ASTM E 2568.

1408.3 Structural design. The underlying structural framing and substrate shall be designed and constructed to resist loads as required by Chapter 16.

1408.4 Weather resistance. EIFS shall comply with Section 1403 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's application instructions.

1408.4.1 EIFS with drainage. EIFS with drainage shall meet the requirements of ASTM E 2273 and is required on framed walls of Type V Construction, Group R1, R2, R3, and R4 occupancies.

1408.4.1.1 For EIFS with drainage, the water-resistive barrier shall comply with Section 1404.2 or ASTM E 2570.

1408.5 Installation. Installation of the EIFS and EIFS with Drainage shall be in accordance with the EIFS manufacturer's instructions.

1408.6 Special Inspections. EIFS installations shall comply with the provisions of Sections 1704.1 and 1704.12.

1704.12.1 Water-resistive barrier coating. A water-resistive barrier coating complying with ASTM E 2570 requires special inspection of the water-resistive barrier coating when installed over a sheathing substrate.

4. Add new standards to Chapter 35 as follows:

ASTM

<u>E 2273-03</u>	<u>Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies</u>
<u>E 2568-07</u>	<u>Standard Specification for PB Exterior Insulation and Finish Systems (EIFS)</u>
<u>E 2570-07</u>	<u>Standard Test Method for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) for EIFS with Drainage</u>

PART II – IRC BUILDING/ENERGY

1. Add new definitions as follows:

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). EIFS are nonstructural, non-load bearing, exterior wall cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. An EIFS that incorporates a means of drainage applied over a water-resistive barrier.

2. Delete and substitute as follows:

~~**R703.9 Exterior insulation finish systems, general.** All Exterior Insulation Finish Systems (EIFS) shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section. Decorative trim shall not be face-nailed through the EIFS. The EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.~~

R703.9.1 Water-resistive barrier. All EIFS shall have a water-resistive barrier applied between the underlying water-sensitive building components and the exterior insulation, and a means of draining water to the exterior of the veneer. A water-resistive barrier shall be compliant with ASTM D226 Type I asphalt saturated felt or equivalent, shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and shall have all vertical joints lapped not less than 6 inches (152 mm).

R703.9.2 Flashing, general. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8.

R703.9 Exterior Insulation and Finish System (EIFS)/EIFS with drainage

R703.9.1 Exterior Insulation and Finish System (EIFS). EIFS shall comply with ASTM E 2568.

R703.9.2 Exterior Insulation and Finish System (EIFS) with drainage. EIFS with drainage shall comply with ASTM E 2568 and ASTM E 2273.

R703.9.2.1 Water-resistive barrier. The water-resistive barrier shall comply with Section R703.2 or ASTM E 2570.

R703.9.2.2 Installation. The water-resistive barrier shall be applied over all building components.

Exception: A water-resistive barrier shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.7 or R703.8.

R703.9.3 Flashing, general. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8

R703.9.4 EIFS/EIFS with drainage installation. All EIFS shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section.

R703.9.4.1 Terminations. The EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.

R703.9.4.2 Decorative trim. Decorative trim shall not be faced nailed though the EIFS.

3. Add standards to Chapter 43 as follows:

ASTM

<u>E 2273-03</u>	<u>Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies</u>
<u>E 2568-07</u>	<u>Standard Specification for PB Exterior Insulation and Finish Systems (EIFS)</u>
<u>E 2570-07</u>	<u>Standard Test Method for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) for EIFS with Drainage</u>

Reason: (IBC) Exterior Insulation and Finish Systems (EIFS) are non-load bearing, exterior wall coverings and have been used successfully in North America in both residential and commercial applications.

The use of EIFS in North America in the mid-1970's was due in large measure to the oil embargo and the resultant surge in interest in high energy efficiency wall systems, in addition to the aesthetics of the exterior appearance of the cladding. Today, EIFS are used extensively all over North America and in many others areas around the world, particularly in Europe and the Pacific Rim. EIFS have been used in the United States for more than thirty years and hold the #1 market share for all commercial claddings.

Because EIFS represented a relatively new concept in building technology at the time of its introduction in North America, it has become one of the most exhaustively tested cladding systems available on the market today. EIFS has been exposed to extensive ASTM / NFPA tests for fire performance, impact resistance, accelerated weathering, and a host of other conditions and performance attributes.

As EIFS were introduced into the U.S., the industry worked with the Evaluation Services of the three legacy Codes to develop Acceptance Criteria that included test requirements and criteria for its applications. Based on this work, the various manufacturers received ES Reports for their products and their various applications.

Existing IBC Section 1704.12 provides some EIFS specific requirements and there are many other existing code chapters/sections (Chapters 14, 16, 26, etc) that although not EIFS specific, do apply to EIFS. Additionally, existing ICC ES Acceptance Criteria (AC 235, AC 219, AC 212, etc.) further establish requirements for EIFS or related components and, based on these criteria, numerous EIFS manufacturers hold evaluation reports to demonstrate code compliance. Currently, the ES Reports provide the primary acceptance mechanism for EIFS.

The purpose of the proposed code change is to further develop existing code language based in part on newly adopted ASTM standards that are specific to EIFS. The following table provides a cross reference to the sections of the ASTM Standards that were previously addressed with the various requirements in the ICC Acceptance Criteria. The AC 219 "Acceptance Criteria for Exterior Insulation and Finish Systems" was converted to ASTM E 2568. The AC 235 "Acceptance Criteria for EIFS Clad Drainage Wall Assemblies" is the same as AC 219 but with the added requirement to test for Drainage Efficiency in accordance with ASTM E 2273. The AC 212 "Acceptance Criteria for Water-Resistive Barrier Coatings Used as Water-Resistive Barriers Over Exterior Sheathing" was converted to ASTM E 2570.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

EIFS and EIFS with Drainage

AC 219 & 235 Test Requirements	ASTM E 2568	Difference between standards
Salt Spray – Section 4.2 ASTM B 117	Section 5.1.1 ASTM B 117	None
Tensile Bond – Section 4.3 ASTM C 297 or E 2134 ¹	Section 5.1.1 ASTM C 297 or E 2134	None
Freeze Thaw - Section 4.4 ICC ES Procedure ²	Section 5.1.1 ASTM E 2485 Section 9.2	None
Water Resistance – Section 4.5 ASTM D 2247	Section 5.1.1 ASTM D 2247	None
Fire Endurance – Section 4.6.1 ASTM E 119	Section 5.3.1 ASTM E 119	None
Noncombustible Construction – Section 4.6.2 NFPA 285	Section 5.3.1 NFPA 285	None
Ignition Resistance – Section 4.6.2 NFPA 268	Section 5.3.1 NFPA 268	None
Surface Burning – Section 4.6.2 ASTM E 84	Section 5.4 ASTM E 84	None
Structural Performance/Wind Load – Section 4.7.1 ASTM E 330	Section 5.5 ASTM E 330	None
Wind Driven Rain/Water Penetration – Section 4.8.1 ASTM E 331	Section 5.1.1 ASTM E331	None
Accelerated Weathering – Section 4.9 ASTM G153 or G 155	Section 5.1.1 ASTM G 153 or G 155	None
Drainage Test – Section 4.10 ASTM E 2273	Not applicable covered in Section 1404.12 of proposed code change	

Water-Resistive Barrier Coating

AC 212 Test Requirements	ASTM E 2570	Difference between standards
Tensile Bond – Section 4.1 ASTM C 297 or E 2134 ¹	Sect. 8.1.1 Conduct tests in accordance with ASTM C 297 or E 2134	None
Freeze Thaw - Section 4.2 ICC ES Procedure ²	Section 8.2.1 Conduct tests in accordance with ASTM E 2485 Section 9.2	None
Water Resistance – Section 4.3 ASTM D 2247	Section 8.3.1 Conduct tests in accordance with ASTM D 2247	None
Water Vapor Transmission – Section 4.4 ASTM E 96	Section 8.4.2 Conduct tests in accordance with ASTM E 96 Section 12	None
Water Penetration – Section 4.4 ASTM E 331	Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	None
Durability <ul style="list-style-type: none"> • Transverse load – Section 4.4.1 ASTM E 1233 Proc. A • Racking – Section 4.6.2 ASTM E 72 • Environmental Conditioning – Section 4.6.3 ASTM E 2570 • Water Penetration – Section 4.7.4 ASTM E 331 	Section 8.5.1.1 Test specimen in accordance with ASTM E 1233 Proc. A Section 8.5.2.1 Apply load per ASTM E 72 Section 8.5.3 ³ Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	None None None None
Weathering <ul style="list-style-type: none"> • Ultraviolet Light Exposure – Section 4.8.1 ICC ES procedure • Wet/Dry Cycling – Section 4.8.2 ICC ES procedure • Hydrostatic Pressure – Section 4.8.3 AATCC Test Method 127-1985 	Section 8.6.1.1 Test specimens in accordance with ASTM D 2898 ⁴ Section 8.6.2.1 ⁵ Section 8.6.3.1 Samples shall be tested in accordance with Method 127-1985	None None None

¹ ASTM E 2134 is specifically for EIFS; ASTM C 297 is generic

² ICC ES procedure was converted to ASTM E 2485

³ ICC ES procedure is listed in Section 8.5.3 of ASTM E 2570

⁴ ASTM D 2898 is referenced with ICC ES conditions noted

⁵ ICC ES procedure is listed in Section 8.6.2.1 of ASTM E 2570

In summary, the establishment of an EIFS specific code section that includes references to other applicable code sections and nationally recognized standards will enable building officials to determine code compliance for these well established systems in a manner that is consistent with other building materials currently in the IBC.

(IRC) Exterior Insulation and Finish Systems (EIFS) are non-load bearing, exterior wall coverings and have been used successfully in North America in both One and Two Family Dwellings as well as commercial applications.

The use of EIFS in North America in the mid-1970's was due in large measure to the oil embargo and the resultant surge in interest in high energy efficiency wall systems, in addition to the aesthetics of the exterior appearance of the cladding. Today, EIFS are used extensively all over North America and in many others areas around the world, particularly in Europe and the Pacific Rim. EIFS have been used in the United States for more than thirty years and hold the #1 market share for all commercial claddings.

Because EIFS represented a relatively new concept in building technology at the time of its introduction in North America, it has become one of the most exhaustively tested cladding systems available on the market today. EIFS has been exposed to extensive ASTM / NFPA tests for fire performance, impact resistance, accelerated weathering, and a host of other conditions and performance attributes.

As EIFS were introduced into the U.S., the industry worked with the Evaluation Services of the three legacy Codes to develop Acceptance Criteria that included test requirements and criteria for its applications. Based on this work, the various manufacturers received ES Reports for their products and their various applications.

Existing IRC Section R703.9 provides some EIFS specific requirements. Additionally, existing ICC ES Acceptance Criteria (AC 235, AC 219, AC 212, etc.) further establish requirements for EIFS or related components and, based on these criteria, numerous EIFS manufacturers hold evaluation reports to demonstrate code compliance. Currently, the ES Reports provide the primary acceptance mechanism for EIFS.

The purpose of the proposed code change is to further develop existing code language based in part on newly adopted ASTM standards that are specific to EIFS. The following table provides a cross reference to the sections of the ASTM Standards that were previously addressed with the various requirements in the ICC Acceptance Criteria. The AC 219 "Acceptance Criteria for Exterior Insulation and Finish Systems" was converted to ASTM E 2568. The AC 235 "Acceptance Criteria for EIFS Clad Drainage Wall Assemblies" is the same as AC 219 but with the added requirement to test for Drainage Efficiency in accordance with ASTM E 2273. The AC 212 "Acceptance Criteria for Water-Resistive Barrier Coatings Used as Water-Resistive Barriers Over Exterior Sheathing" was converted to ASTM E 2570.

EIFS and EIFS with Drainage

AC 219 & 235 Test Requirements	ASTM E 2568	Difference between standards
Salt Spray – Section 4.2 ASTM B 117	Section 5.1.1 ASTM B 117	None
Tensile Bond – Section 4.3 ASTM C 297 or E 2134 ¹	Section 5.1.1 ASTM C 297 or E 2134	None
Freeze Thaw - Section 4.4 ICC ES Procedure ²	Section 5.1.1 ASTM E 2485 Section 9.2	None
Water Resistance – Section 4.5 ASTM D 2247	Section 5.1.1 ASTM D 2247	None
Fire Endurance – Section 4.6.1 ASTM E 119	Section 5.3.1 ASTM E 119	None
Noncombustible Construction – Section 4.6.2 NFPA 285	Section 5.3.1 NFPA 285	None
Ignition Resistance – Section 4.6.2 NFPA 268	Section 5.3.1 NFPA 268	None
Surface Burning – Section 4.6.2 ASTM E 84	Section 5.4 ASTM E 84	None
Structural Performance/Wind Load – Section 4.7.1 ASTM E 330	Section 5.5 ASTM E 330	None
Wind Driven Rain/Water Penetration – Section 4.8.1 ASTM E 331	Section 5.1.1 ASTM E331	None
Accelerated Weathering – Section 4.9 ASTM G153 or G 155	Section 5.1.1 ASTM G 153 or G 155	None
Drainage Test – Section 4.10 ASTM E 2273	Not applicable covered in Section 1404.12 of proposed code change	

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Water-Resistive Barrier Coating

AC 212 Test Requirements	ASTM E 2570	Difference between standards
Tensile Bond – Section 4.1 ASTM C 297 or E 2134 ¹	Sect. 8.1.1 Conduct tests in accordance with ASTM C 297 or E 2134	None
Freeze Thaw - Section 4.2 ICC ES Procedure ²	Section 8.2.1 Conduct tests in accordance with ASTM E 2485 Section 9.2	None
Water Resistance – Section 4.3 ASTM D 2247	Section 8.3.1 Conduct tests in accordance with ASTM D 2247	None
Water Vapor Transmission – Section 4.4 ASTM E 96	Section 8.4.2 Conduct tests in accordance with ASTM E 96 Section 12	None
Water Penetration – Section 4.4 ASTM E 331	Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	None
Durability <ul style="list-style-type: none"> • Transverse load – Section 4.4.1 ASTM E 1233 Proc. A • Racking – Section 4.6.2 ASTM E 72 • Environmental Conditioning – Section 4.6.3 ASTM E 2570 • Water Penetration – Section 4.7.4 ASTM E 331 	Section 8.5.1.1 Test specimen in accordance with ASTM E 1233 Proc. A Section 8.5.2.1 Apply load per ASTM E 72 Section 8.5.3 ³ Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	None None None None
Weathering <ul style="list-style-type: none"> • Ultraviolet Light Exposure – Section 4.8.1 ICC ES procedure • Wet/Dry Cycling – Section 4.8.2 ICC ES procedure • Hydrostatic Pressure – Section 4.8.3 AATCC Test Method 127-1985 	Section 8.6.1.1 Test specimens in accordance with ASTM D 2898 ⁴ Section 8.6.2.1 ⁵ Section 8.6.3.1 Samples shall be tested in accordance with Method 127-1985	None None None

¹ ASTM E 2134 is specifically for EIFS; ASTM C 297 is generic

² ICC ES procedure was converted to ASTM E 2485

³ ICC ES procedure is listed in Section 8.5.3 of ASTM E 2570

⁴ ASTM D 2898 is referenced with ICC ES conditions noted

⁵ ICC ES procedure is listed in Section 8.6.2.1 of ASTM E 2570

In summary, the establishment of an EIFS specific code section that includes references to other applicable code sections and nationally recognized standards will enable building officials to determine code compliance for these well established systems in a manner that is consistent with other building materials currently in the IRC.

Cost Impact: This code change will not increase the cost of construction.

Public Hearing Results

Note (Part I and Part II): The following analysis was not in the Code Change Proposal book but was posted on the ICC website.

Analysis: Review of proposed new standard ASTM E2273-03 indicated that, in the opinion of ICC Staff, the standard did not comply with ICC standards criteria (Section 3.6.2.9).

Note (Part I and Part II): The following analysis was not in the Code Change Proposal book but was posted on the ICC website.

Analysis: Review of proposed new standard ASTM E2568-07 and ASTM E2570-07 indicated that, in the opinion of ICC Staff, the standard did comply with ICC standards criteria.

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Modified

Modify the proposal as follows:

1404.11 Exterior Insulation and finish system. Exterior Insulation and Finish System (EIFS) shall comply with ~~ASTM E 2568~~ and Exterior Insulation and Finish System (EIFS) with Drainage shall comply with Section 1408 ~~ASTM E 2568 and ASTM E 2273~~.

1408.4.1 EIFS with drainage. EIFS with drainage shall have an average minimum drainage efficiency of 90 percent when tested in accordance ~~meet~~ the requirements of ASTM E 2273 and is required on framed walls of Type V Construction, Group R1, R2, R3, and R4 occupancies.

(Portions of proposal not shown remain unchanged)

Committee Reason: The committee indicated that the proposed requirements for exterior insulation and finish systems with and without drainage are technically accurate and complete and are therefore an appropriate addition to the code. The modification to Section 1404.11 references Section 1408, which contains reference to the standards that have been struck. The modification to Section 1408.4.11 provides appropriate pass/fail criteria for the drainage systems.

Assembly Action: **None**

**PART II – IRC B/E
Committee Action:**

Approved as Modified

Modify proposal as follows:

R703.9.2 Exterior Insulation and Finish System (EIFS) with drainage. EIFS with drainage shall comply with ASTM E 2568 and shall have an average minimum drainage efficiency of 90% when tested in accordance with ASTM E 2273.

R703.9.2.2 Installation. The water-resistive barrier shall be applied between the EIFS and the wall sheathing over all building components.

(Portions of proposal not shown remain unchanged)

Committee Reason: This change adds a product into the code that has been used many years and has been improved substantially. Also, this establishes the criteria for use by the Building Official for evaluation and installation. The modification adds criteria for drainage efficiency and clarifies the intent.

Assembly Action: **None**

Final Hearing Results

FS175-07/08, Part I	AM
FS175-07/08, Part II	AM

Code Change No: FS177-07/08

Original Proposal

Sections: 1403.2, 1405.3 (New), 1405.3.1 (New), Table 1405.3.1 (New), 1405.3.2 (New), 1405.3.3 (New); IECC 402.5, 502.5; IRC N1102.5

Proponent: Joseph Lstiburek, Building Science Consulting

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY, THE IECC AND THE IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES AS 3 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Revise as follows:

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. The exterior wall envelope 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 ~~the International Energy Conservation Code~~ Section 1405.3.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.

2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.3, shall not be required for an exterior wall envelope 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 wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
 - 2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
 - 2.3. Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m²).
 - 2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.

The exterior wall envelope 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.

2. Add new text as follows:

1405.3 Vapor retarders. Class I or II vapor retarders shall be provided on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.

Exceptions:

1. Basement walls.
2. Below grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

1405.3.1 Class III vapor retarders. Class III vapor retarders shall be permitted where any one of the conditions in Table 402.5.1 are met.

**TABLE 1405.3.1
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:¹
<u>Marine 4</u>	<u>Vented cladding over OSB</u> <u>Vented cladding over Plywood</u> <u>Vented cladding over Fiberboard</u> <u>Vented cladding over Gypsum</u> <u>Insulated sheathing with R-value ≥ R2.5 over 2x4 wall</u> <u>Insulated sheathing with R-value ≥ R3.75 over 2x6 wall</u>
<u>5</u>	<u>Vented cladding over OSB</u> <u>Vented cladding over Plywood</u> <u>Vented cladding over Fiberboard</u> <u>Vented cladding over Gypsum</u> <u>Insulated sheathing with R-value ≥ R5 over 2x4 wall</u> <u>Insulated sheathing with R-value ≥ R7.5 over 2x6 wall</u>
<u>6</u>	<u>Vented cladding over Fiberboard</u> <u>Vented cladding over Gypsum</u> <u>Insulated sheathing with R-value ≥ R7.5 over 2x4 wall</u> <u>Insulated sheathing with R-value ≥ R11.25 over 2x6 wall</u>
<u>7 and 8</u>	<u>Insulated sheathing with R-value ≥ R10 over 2x4 wall</u> <u>Insulated sheathing with R-value ≥ R15 over 2x6 wall</u>

1. Spray foam with a minimum density of 2 lbs/ft³ applied to the interior cavity side of OSB, plywood, fiberboard, or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

1405.3.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer’s certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

- Class I: Sheet polyethylene, non-perforated aluminum foil
- Class II: Kraft faced fiberglass batts or paint with a perm rating greater than 0.1 and less than or equal to 1.0
- Class III: Latex or enamel paint

1405.3.3 Minimum clear air spaces and vented openings for vented cladding. For the purposes of this section vented cladding shall include the following minimum clear air spaces.

1. Vinyl lap or horizontal aluminum siding applied over a weather resistive barrier as specified in this Chapter.
2. Brick veneer with a clear airspace as specified in this code.
3. Other approved vented claddings.

PART II – IECC

Delete without substitution as follows:

402.5 (Supp) Vapor retarders. Class I or II vapor retarders are required on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.

Exceptions:

1. ~~Basement walls.~~
2. ~~Below grade portion of any wall.~~
3. ~~Construction where moisture or its freezing will not damage the materials.~~

502.5 (Supp) Vapor retarders. Class I or II vapor retarders are required on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.

Exceptions:

1. ~~Basement walls.~~
2. ~~Below grade portion of any wall.~~
3. ~~Construction where moisture or its freezing will not damage the materials.~~

PART III – IRC BUILDING/ENERGY

Revise as follows:

N1102.5 (Supp) R602.1 Vapor retarders. Class I or II vapor retarders are required on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4

Exceptions:

1. Basement walls.
2. Below grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

N1102.5.1 (Supp) R602.1.1 Class III vapor retarders. Class III vapor retarders shall be permitted where any one of the conditions in ~~Table N1102.5.1~~ R602.1.1 are met.

**TABLE N1102.5.1 R602.1.1 (Supp)
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR: ¹
Marine 4	Vented cladding over OSB Vented cladding over plywood Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with R -value ≥ 2.5 over 2x4 wall Insulated sheathing with R -value ≥ 3.75 over 2x6 wall
5	Vented cladding over OSB Vented cladding over plywood Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with R -value ≥ 5 over 2x4 wall Insulated sheathing with R -value ≥ 7.5 over 2x6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with R -value ≥ 7.5 over 2x4 wall Insulated sheathing with R -value ≥ 11.25 over 2x6 wall
7 and 8	Insulated sheathing with R -value ≥ 10 over 2x4 wall Insulated sheathing with R -value ≥ 15 over 2x6 wall

1. Spray foam with a minimum density of 2 lbs/ft³ applied to the interior cavity side of OSB, plywood, fiberboard, or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

N1102.5.2 (Supp) R602.1.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer’s certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

- Class I: Sheet polyethylene, non-perforated aluminum foil
- Class II: Kraft faced fiberglass batts
- Class III: Latex or enamel paint

N1102.5.3 (Supp) R602.1.3 Minimum clear air spaces and vented openings for vented cladding. For the purposes of this section, vented cladding shall include the following minimum clear air spaces. Other openings with the equivalent vent area shall be permitted.

1. Vinyl lap or horizontal aluminum siding applied over a weather resistive barrier as specified in Table R703.4.
2. Brick veneer with a clear airspace as specified in Section R703.7.4.2.
3. Other approved vented claddings.

(Renumber subsequent sections)

Reason: In the last code cycle, the vapor retarder requirements in the IECC, IRC, and IBC were entirely revised. This change does not alter those requirements.

This change moves the new vapor retarder requirements into their proper location. The vapor retarder requirements are not “energy” requirements. The vapor retarder requirements are more logically related to the building code as a whole; therefore, those requirements are moved from the IECC into the IRC and IBC. Most of the resulting language in the IBC and IRC is intentionally identical. Because the I-codes inherit definitions from each other, the definition of vapor retarders can be used in any of the I-codes.

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

Public Hearing Results

**PART I – IBC FIRE SAFETY
Committee Action:**

Approved as Modified

Modify the proposal as follows:

**TABLE 1405.3.1
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:¹
Marine 4	Vented cladding over OSB Vented cladding over Plywood Vented cladding over Fiberboard Vented cladding over Gypsum Insulated sheathing with R-value \geq R2.5 over 2x4 wall Insulated sheathing with R-value \geq R3.75 over 2x6 wall
5	Vented cladding over OSB Vented cladding over Plywood Vented cladding over Fiberboard Vented cladding over Gypsum Insulated sheathing with R-value \geq R5 over 2x4 wall Insulated sheathing with R-value \geq R7.5 over 2x6 wall
6	Vented cladding over Fiberboard Vented cladding over Gypsum Insulated sheathing with R-value \geq R7.5 over 2x4 wall Insulated sheathing with R-value \geq R11.25 over 2x6 wall
7 and 8	Insulated sheathing with R-value \geq R10 over 2x4 wall Insulated sheathing with R-value \geq R15 over 2x6 wall

1. Spray foam with a minimum density of 2 lbs/ft³ applied to the interior cavity side of OSB, plywood, fiberboard, insulating sheathing or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

Committee Reason: The committee agreed that this change appropriates locates the technical requirements for vapor retarders in the Chapter 14 of the Building Code from the *International Energy Code* because this construction component is a building issue not an energy issue. The modification appropriately adds insulating sheathing to footnote 1 to be consistent with the entries in the Table.

Assembly Action:

None

PART II – IECC

Committee Action:

Approved as Submitted

Committee Reason: Committee agrees with proponent that these requirements for vapor retarders are not energy code issues.

Assembly Action:

None

PART III – IRC B/E

Committee Action:

Approved as Modified

Modify proposal as follows:

**TABLE R602.1.1
CLASS III VAPOR RETARDERS**

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:¹
Marine 4	Vented cladding over OSB Vented cladding over plywood Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with R-value \geq 2.5 over 2x4 wall Insulated sheathing with R-value \geq 3.75 over 2x6 wall
5	Vented cladding over OSB Vented cladding over plywood Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with R-value \geq 5 over 2x4 wall Insulated sheathing with R-value \geq 7.5 over 2x6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with R-value \geq 7.5 over 2x4 wall Insulated sheathing with R-value \geq 11.25 over 2x6 wall
7 and 8	Insulated sheathing with R-value \geq 10 over 2x4 wall Insulated sheathing with R-value \geq 15 over 2x6 wall

1. Spray foam with a minimum density of 2 lbs/ft³ applied to the interior cavity side of OSB, plywood, fiberboard, insulating sheathing or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

(Portions of proposal not shown remain unchanged)

Committee Reason: This change moves the vapor retarder requirement into the proper location in the code. The proper location is the wall chapter since vapor retarder requirements are not energy issues. The modification was made to add insulating sheathing to the footnote which was inadvertently omitted.

Assembly Action:

None

Final Hearing Results

FS177-07/08, Part I	AM
FS177-07/08, Part II	AS
FS177-07/08, Part III	AM

Code Change No: FS178-07/08

Original Proposal

Sections: 1405.4, 1406.2.2, 1407.11.1, 1407.11.2

Proponent: Philip Brazil, PE, Reid Middleton, Inc., himself

Revise as follows:

1405.4 (Supp) Wood veneers. Wood veneers on exterior walls of buildings of Type I, II, III and IV construction shall be not less than 1 inch (25 mm) nominal thickness, 0.438-inch (11.1 mm) exterior hardboard siding or 0.375-inch (9.5 mm) exterior-type wood structural panels or particleboard and shall conform to the following:

1. The veneer shall not exceed ~~three stories~~ 40 feet (12.19 m) in height above the grade plane. Where fire retardant-treated wood is used, the height shall not exceed ~~four stories~~ 60 feet (18.29 m) in height above grade.
2. The veneer is attached to or furred from a noncombustible backing that is fire-resistance rated as required by other provisions of this code.
3. Where open or spaced wood veneers (without concealed spaces) are used, they shall not project more than 24 inches (610 mm) from the building wall.

1406.2.2 (Supp) Architectural trim. In buildings of Type I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of wood where permitted by Section 1405.4 or other equivalent combustible material. Combustible exterior wall coverings, other than fire-retardant-treated wood complying with Section 2303.2 for exterior installation, shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less. Combustible architectural trim shall be limited to ~~three stories or~~ 40 feet (12 192 mm) in height above grade plane. Noncombustible materials shall be permitted to be of any height provided the materials are secured to the wall with metal or other approved noncombustible brackets.

Exception: Combustible architectural trim of fire-retardant treated wood shall be permitted up to ~~four stories or~~ 60 feet (18.29 m) in height above grade plane.

1407.11.1 Installations up to 40 feet in height. MCM shall not be installed more than 40 feet (12 190 mm) in height above ~~the grade plane~~ where installed in accordance with Sections 1407.11.1.1 and 1407.11.1.2.

1407.11.2 Installations up to 50 feet in height. MCM shall not be installed more than 50 feet (15 240 mm) in height above ~~the grade plane~~ where installed in accordance with Sections 1407.11.2.1 and 1407.11.2.2.

Reason: Proposal G44-04/05-AM successfully established the distinction between “grade plane” as a measurement of the height and number of stories of a building above the finished ground surface and “grade” as a measurement of the height of a component of the building above the finished ground surface. Grade plane is an imaginary horizontal reference plane representing the weighted average of the finished ground surface adjoining the building at its perimeter. The grade plane of each building is located at a single, unique elevation. Grade, however, is not imaginary but is the actual finished ground surface adjoining the building at its perimeter, which varies in elevation with the ground surface.

This proposal builds on this distinction in four specific code sections by changing the thresholds for components of buildings (i.e., veneer, architectural trim and exterior wall coverings) from being based on grade plane to being based on grade. This will bring better consistency among the provisions of the IBC whose limitations are based on their heights above the finished ground surface. A comprehensive review of the 2006 IBC and 2007 Supplement was made during the preparation of this proposal and it was determined that code sections with height limits on building components are based on measuring from grade except for the ones in this proposal. Examples of these in Chapters 1-10 are Sections 105.2 (Building Item 6), 418.4, 507.6 (Item 3), 602.4.3, 603.1 (Item 6), 903.2.10.1 (Item 1), 905.4 (Item 1), 1009.3.2 (Paragraph 2), 1013.1, 1013.4, 1013.5, 1019.1, 1022.2 (Exception), 1024.1, 1025.14.1, 1025.14.2, 1025.14.3 and 1026.2 (Exception).

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

Public Hearing Results

Errata: FS178-07/08: Replace Section 1406.2.2 with the following:

1406.2.2 (Supp) Architectural trim. In buildings of Type I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of wood where permitted by Section 1405.4 or other equivalent combustible material. Combustible exterior wall coverings, other than fire-retardant-treated wood complying with Section 2303.2 for exterior installation, shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less. Combustible architectural trim shall be limited to ~~three stories or~~ 40 feet (12 192 mm) in height above grade plane. Noncombustible materials shall be permitted to be of any height provided the materials are secured to the wall with metal or other approved noncombustible brackets.

Exception: Combustible architectural trim of fire-retardant treated wood shall be permitted up to ~~four stories or~~ 60 feet (18.29 m) in height above grade plane.

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that based on changes in the thresholds for components of buildings (i.e., veneer, architectural trim and exterior wall coverings) from being based on grade plane to being based on grade, this change is appropriate and will bring consistency among the provisions of the IBC whose limitations are based on their heights above the finished ground surface.

Assembly Action:

None

Final Hearing Results

FS178-07/08

AS

Code Change No: FS181-07/08

Original Proposal

Section: 1405.13

Proponent: Matthew Dobson, Vinyl Siding Institute

Revise as follows:

1405.13 Vinyl siding. Vinyl siding conforming to the requirements of this section and complying with ASTM D 3679 shall be permitted on exterior walls of buildings of ~~Type V construction located~~ in areas where the basic wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building. Vinyl siding on the exterior wall of building of Type I, II, II and IV construction shall meet the requirements of 1406.

Reason: Section 1406 of the IBC provides clear requirements for combustible claddings used in various types of construction. This change helps to clarify that when vinyl siding is used in construction Types other than Type V, it must meet the requirements of section 1406 just like other combustible exterior wall coverings.

Additionally, the ICC ES Acceptance Criteria for vinyl siding states that "3.4 Ignition Resistance: For recognition under the IBC and BNBC, for construction other than Type V, the siding shall comply with Section 1406.2 of the IBC and Section 1407.2.1 of the BNBC. For SBC compliance, exterior walls shall not exhibit sustained flaming where tested in accordance with NFPA 268."

This clarification reflects the established references from the acceptance criteria.

Additionally supplied is typical product specifications which clearly demonstrates conformance to section 1406 of the IBC.

"Fire Resistance Characteristics:

Average Time of Burning <5 sec. (ASTM D 635) Average Extent of Burning 9.4 mm (ASTM D 635) Flame Spread 20 (ASTM E 84)

Smoke Density 390 (ASTM E 84)

Ignition Properties Self Ignition did not occur. At 797°F sample began to smolder and continued until consumed (ASTM D 1929)

Radiant Panel Test XXXXX Siding met the conditions for allowable use as specified in section 1406 of the International Building Code. (NFPA 268)"

"NFPA 268 Radiant Heat Test/Ignition Resistance of Exterior Walls. Conclusion that the XXX vinyl sidings were tested and met the conditions for allowable use as specified in Section 1406 of the International Standard Building Code.

The requirements that are applicable to Type I, II, III, and IV construction are simply restated in a straightforward manner in a separate sentence. This only clarifies a confusing passage in the current code language and does not modify any current requirements; therefore the cost of construction should not be affected.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

1405.13 Vinyl siding. Vinyl siding conforming to the requirements of this section and complying with ASTM D 3679 shall be permitted on exterior walls of buildings ~~of~~ located in areas where the basic wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building. ~~Vinyl siding on the exterior wall of building of Type I, II, III and IV construction shall meet the requirements of 1406.~~

Committee Reason: The committee agreed that this change helps to clarify that the requirements of 1405.13 are applicable to vinyl siding regardless of the type of construction. Therefore it is appropriate to delete the limitation of Type V construction. Further, the modification appropriately deletes reference to Section 1406 because Section 1405.13 is dealing strictly with structural limitations, whereas Section 1406 deals with fire resistive requirements.

Assembly Action:

None

Final Hearing Results

FS181-07/08

AM

Code Change No: FS182-07/08

Original Proposal

Sections: 1405.15, 1405.17 through 1405.17.2; IRC R703.10.1, R703.10.2, Table R703.4

Proponent: Chad Diercks, James Hardie Building Products, Inc.

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY AND IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES AS 2 SEPARATE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Add new text as follows:

1405.15.1 Panel siding. Fiber-cement panels shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II. Panels shall be installed with the long dimension either parallel or perpendicular to framing. Vertical and horizontal joints shall occur over framing members and shall be sealed with caulking, covered with battens or shall be designed to comply with Section 1403.2. Panel siding shall be installed with fasteners in accordance with the approved manufacturer's instructions.

1405.15.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II. Lap siding shall be lapped a minimum of 1¼ inches and lap siding not having tongue-and-groove end joints shall have the ends sealed with caulking, covered with an H-section joint cover, located over a strip of flashing, or shall be designed to comply with Section 1403.2. Lap siding courses shall be installed with the fastener heads exposed or concealed in accordance with the approved manufacturer's instructions.

2. Delete without substitution as follows:

1405.17 Fiber cement siding.

1405.17.1 Panel siding. Panels shall be installed with the long dimension parallel to framing. Vertical joints shall occur over framing members and shall be sealed with caulking or covered with battens. Horizontal joints shall be flashed with Z-flashing and blocked with solid wood framing.

1405.17.2 Horizontal lap siding. Lap siding shall be lapped a minimum of 1¼ inches (32 mm) and shall have the ends sealed with caulking, covered with an H-section joint cover or located over a strip of flashing. Lap siding courses shall be permitted to be installed with the fastener heads exposed or concealed, according to approved manufacturers' instructions.

PART II – IRC BUILDING/ENERGY

Revise as follows:

**TABLE R703.4
WEATHER-RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS**

SIDING MATERIAL	NOMINAL THICKNESS ^a (inches)	JOINT TREATMENT	WATER RESISTIVE BARRIER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS ^{b,c,d}					
				Wood or wood structural panel sheathing	Fiber board sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Fiber cement panel siding ^{fs}	5/16	Note s	Yes Note x	6d <u>common</u> corrosion resistant nail ^t	6d <u>common</u> corrosion resistant nail ^t	6d <u>common</u> corrosion resistant nail ^t	6d <u>common</u> corrosion resistant nail ^{t,y}	4d <u>common</u> corrosion resistant nail ^{ut}	6" oc on edges, 12" oc on intermed. studs
Fiber cement lap siding ^{fv}	5/16	Note v	Yes Note x	6d <u>common</u> corrosion resistant nail ^t	6d <u>common</u> corrosion resistant nail ^t	6d <u>common</u> corrosion resistant nail ^t	6d <u>common</u> corrosion resistant nail ^{t,y}	6d <u>common</u> corrosion resistant nail ^t OR 11 gage roofing nail ^t	Note w

f. Fiber cement siding shall comply with the requirements of ASTM C 1186.

t. Minimum 0.102 inch smooth shank, 0.255 inch round head. Fasteners shall comply with the nominal dimensions in ASTM F1667

u. Minimum 0.099 smooth shank, 0.250 round head.

w. Face nailing: 2 nails one 6d common nail through the overlapping planks at each stud. Concealed nailing: one 11 gage 11/2 inch long galv. roofing nail (0.371 head diameter, 0.120 shank) or 6d galv. box nail at each stud: through the top edge of each plank at each stud.

(Portions of table and footnotes not shown remain unchanged)

R703.10.1 Panel siding. Fiber-cement panels shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II. Panels shall be installed with the long dimension either parallel or perpendicular to framing. Vertical and horizontal joints shall occur over framing members and shall be sealed with caulking, or covered with battens, or shall be designed to comply with Section R703.1. Horizontal joints shall be flashed with Z-flashing and blocked with solid wood framing. Panel siding shall be installed with fasteners according to Table R703.4 or approved manufacturer's installation instructions.

R703.10.2 Horizontal Lap siding. Fiber-cement lap siding having a maximum width of 12 inches shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II. Lap siding shall be lapped a minimum of 1¼ inches (32 mm) and lap siding not having tongue-and-groove end joints shall have the ends sealed with caulking, covered installed with an H-section joint cover, or located over a strip of flashing, or shall be designed to comply with Section R703.1. Lap siding courses may be installed with the fastener heads exposed or concealed, according to Table R703.4 or approved manufacturers' installation instructions.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

Reason: (IBC) The purpose of this proposed Code change is to clarify and correct errors and omissions in the current language describing the recognized products and recognized methods of installation.

Revision of Section 1405.15, addition of new text 1405.15.1, and deletion of Section 1405.17 and 1405.17.1

The current Code language fails to specify the product “classification type”; either “Type A – Sheets are intended for exterior applications, subject to the direct action of sun, rain or snow” or “Type B – Sheets are intended for exterior application, not subjected to the direct action of sun, rain, or snow” (see ASTM C1186, Sections 4.1 and 4.2). The current Code language fails to specify a minimum “product grade” according to flexural strength either Grade I, II, III or IV (see ASTM C1186 Section 4.4 and Table 1). Additionally, panels are often installed horizontally under windows and as infill panels over windows, doors and in gables where all edges of the panels are supported by framing members. Lastly, the reference to Section 1403.2 Weather Protection is clarifying and is needed to address alternate joint designs currently being used in the field. This would require water penetration testing of these alternative joint designs to ASTM E 331 thereby substantiating the alternate design.

Consequently, Type A sheets suitable for full exterior exposure applications must be specified and the minimum flexural strength specified should be Grade II. Attachment in accordance with should also be clearly stated. Additionally, sheets should be permitted for horizontal application. Finally, jointing shall be in such a manner to comply with Section 1403.2.

Revision of Section 1405.15, addition of new text 1405.15.2, and deletion of Section 1405.17 and 1405.17.2

The current Code language fails to specify a maximum product width. A maximum plank width of 12 inches is proposed and is consistent with the current market offerings for lap siding.

The current Code language fails to specify the product “classification type”; either “Type A – Sheets are intended for exterior applications, subject to the direct action of sun, rain or snow” or “Type B – Sheets are intended for exterior application, not subjected to the direct action of sun, rain, or snow” (see ASTM C1186, Sections 4.1 and 4.2).

The current Code language fails to specify a minimum “product grade” according to flexural strength either Grade I, II, III or IV (see ASTM C1186 Section 4.4 and Table 1).

Consequently, the maximum width of plank is specified at 12 inches. Type A sheets (lap siding) suitable for full exterior exposure applications must be specified and the minimum flexural strength specified should be Grade II.

Additionally, besides being installed horizontally, lap siding is often installed diagonally or vertically in a “board-and-batten” type application. The reference to “horizontal” should be removed.

Lastly, the reference to Section 1403.2 Weather Protection is clarifying and is needed to address alternate joint designs currently being used in the field. This would require water penetration testing of these alternative joint designs to ASTM E 331 thereby substantiating the alternate design.

ICC-ES Acceptance Criteria (AC-90), Section 3.1 supports the proposal for “Type A” sheets (see also evaluation reports for Certaineed Corporation ESR-1668, Section 6.1; James Hardie Building Products NER-405, Section 3.1; and Mexalit Industrial ER-5139, Section 3). The sheet types, according to their intended application, are classified in Section 4.1 of ASTM C1186. The current Industry Standard for flexural strength (bending strength) of exterior flat sheets and planks is Grade II and is verified in a manufacturer’s product declaration (see Mexalit Industrial flexural strength technical data sheet page 2, “Bending Strengths”) and a manufacturer’s evaluation report (see James Hardie Building Products NER-405, Section 3.1, paragraph 3). Section 6.2.1 and Table 1 of ASTM C1186 corroborates this assertion.

Panel siding is currently recognized for installation either vertically or horizontally when the panel edges are supported by framing. (see evaluation report for James Hardie Building Products NER-405, Table 3, footnote 1). Horizontal panel installation should not be prohibited when the panel edges are supported by framing. From an engineering standpoint, as long as the panels are fastened to framing at all supported edges and at intermediate framing members in accordance with the approved manufacturer’s instructions, attributed wind loads and structural loads are not compromised.

The current Industry Standard for fiber-cement planks is a maximum of 12 inches wide (see evaluation reports for Certaineed Corporation ESR 1668, Table 1; James Hardie Building Products NER-405, Table 1; and Mexalit Industrial ER-5139, Table 1).

Fiber-cement lap siding may be installed vertically, diagonally as well as horizontally. As long as the minimum 1¼ inch lap is maintained and the lap siding courses are installed with the fastener heads exposed or concealed, according to the approved manufacturer’s instructions, the system structural performance is not compromised.

Flashing within the context of IBC Section 1405, “Installation Of Wall Coverings”, is currently described in Section 1405.3. Consequently, prescriptive flashing details that may be contraindicated by the architectural design should not be included in this section.

Designing joints within the context of IBC Section 1403.2, “Weather Protection”, is currently described in Section 1403.2. This section allows for alternate designs via compliance testing to ASTM E 331. As a consequence, joint designs complying with ASTM E 331 would substantiate the exceptions under Section 1403.2 thereby allowing for a code compliant installation.

Bibliography:

ICC-ES (AC90) Acceptance Criteria for Fiber Cement Siding used as Exterior Wall Siding.

Certaineed Corporation ES Report ESR-1668

James Hardie Building Products Legacy Report NER-405

Mexalit Industrial Legacy Report ER-5139

North Pacific (MaxiPanel® & MaxiPlank®) Cement Fiber Siding Technical Data

ASTM C1186-02, Standard Specification for Flat Non-Asbestos Fiber-Cement Sheets

ASTM E331-00, Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference

(IRC) The purpose of this proposed Code change is to clarify and correct errors and omissions in the current language describing the recognized product and recognized methods of installation.

Revision of Section 703.10.1

The current Code language fails to specify the product “classification type”; either “Type A – Sheets are intended for exterior applications, subject to the direct action of sun, rain or snow” or “Type B – Sheets are intended for exterior application, not subjected to the direct action of sun, rain, or snow.” (see ASTM C1186-02, Sections 4.2 and 4.2). The current Code language fails to specify a minimum “product grade” according to flexural strength as either Grade I, II, III or IV (see ASTM C1186-02, Section 4.4 and Table 1). The current Code language is unclear concerning the fastening requirements for compliance with either the minimum prescriptive performance requirements as described in Section R703.2 (Table R703.4), or alternative approved fastening requirements complying with the attachment requirements of Tables R301.2(2) and R301.2(3). Additionally, panels are often installed horizontally under windows and as infill panels over windows, doors and in gables where all edges of the panels are supported by framing members. Lastly, the reference to Section R703.1 “General” Exterior Covering is clarifying and is needed to address alternate joint designs currently being used in the field. This would require water penetration testing of these alternative joint designs to ASTM E 331 thereby substantiating the alternate design.

Consequently, Type A sheets suitable for full exterior exposure applications must be specified and the minimum flexural strength specified should be Grade II. Attachment in accordance with the minimum prescriptive requirements of Table R703.4 or alternative “performance-based” attachment should also be clearly stated. Additionally, sheets should be permitted for horizontal application. Flashing is described in R703.8 and can therefore be omitted in this section. Finally, jointing shall be in such a manner to comply with Section R703.1

Revision of Section R703.10.2

The current Code language fails to specify a maximum product width. Conceivably, lap siding having a width of 24 inches could be installed in accordance with Table R703.4 with an expectation of a specified level of wind resistance. I believe that all current published engineering (manufacturer's instructions and evaluation reports) on this documents a maximum plank width of 12 inches to perform to the tabled requirements.

The current Code language fails to specify the product "classification type"; either "Type A – Sheets are intended for exterior applications, subject to the direct action of sun, rain or snow" or "Type B – Sheets are intended for exterior application, not subjected to the direct action of sun, rain, or snow" (see ASTM C1186-02, Sections 4.2 and 4.2).

The current Code language fails to specify a minimum "product grade" according to flexural strength, either Grade I, II, III or IV (see ASTM C1186-02, Section 4.4 and Table 1).

The current Code language is unclear concerning the fastening requirements for compliance with either the minimum prescriptive performance requirements as described in Section R703.2 (Table R703.4), or alternative approved fastening requirements complying with the attachment requirements of Tables R301.2(2) and R301.2(3).

Lastly, the reference to Section R703.1 "General" Exterior Covering is clarifying and is needed to address alternate joint designs currently being used in the field. This would require water penetration testing of these alternative joint designs to ASTM E 331 thereby substantiating the alternate design.

Consequently, the maximum width of plank is specified at 12 inches. Type A sheets (lap siding) suitable for full exterior exposure applications must be specified and the minimum flexural strength specified should be Grade II. Attachment in accordance with the minimum prescriptive requirements of Table R703.4 or alternative "performance-based" attachment should also be clearly stated. Additionally, besides being installed horizontally, lap siding is often installed diagonally or vertically in a "board-and-batten" type application. Finally, jointing shall be in such a manner to comply with Section R703.1

Deletion of footnote "r" in Table R703.4

Fiber-cement is not correctly described in the existing footnote "r". Recommended revisions to Sections R703.10.2 and R703.10.2 fully accommodate the description of Fiber-Cement Exterior Cladding.

Revision to footnote "t" of Table R703.4

The current tabled fasteners for the attachment of fiber-cement are "6d corrosion resistant nail (superscript - t)" or "4d corrosion resistant nail (superscript u)". Neither of the minimum fastener dimensions in footnotes "t" and "u" conforms to nominal dimensions in the National Standard (ASTM F 1667) for either "common" or "box" nails. The fasteners referenced in the table and footnotes should comply with the dimensions in the current National Standard.

"ASTM F 1667, Table 6 (Type I, Style 4A – Box Nails"

4d = nominal 1½ inch long, 0.080 inch shank, 0.219 inch head diameter

6d = nominal 2 inch long, 0.099 inch shank diameter, 0.266 inch head diameter

"ASTM F 1667, Table 15 "Type I, Style 10 – Common Nails"

4d = nominal 1½ inch long, 0.099 inch shank, 0.250 inch head diameter

6d = nominal 2 inch long, 0.113 inch shank diameter, 0.266 inch head diameter

Tolerances (ASTM F 1667, Section 8.2) on nominal dimensions for nails and spikes are:

± 1/16 inch for lengths over 1 inch, up to and including 2½ inches;

± 0.004 inch for shank diameters of 0.076 inch and larger;

+0, -10% for head diameter for roofing nails; and

± 10% for head diameters of other brand, nails, and spikes.

Delete footnote "u" of Table R703.4 without substitution

Footnote "t" has been revised to specify fasteners complying with nominal dimensions in ASTM F1667. Information contained in footnote "u" is no longer necessary.

Revision to footnote "w" of Table R703.4

The current Code language is contradictory in the description of fasteners for face nailing and concealed nailing in order to comply with the prescriptive performance requirements as described in Section R703.4 "Attachments" (<110 miles per hour, Category C at 33 feet above ground). It is inconsistent to permit 6d galv. box nails (nominal head diameter of 0.266 inch) to be used for concealed nailing in the same section that specifies 11 gage, 1-1/2 inch long roofing nails (nominal head diameter of 0.371 inch) for concealed fastening. Current manufacturer compliance reports do not recognize the use of fasteners having a nominal head diameter of 0.267 inch for concealed fastening. Current manufacturer compliance reports do recognize the use of roofing nails having a nominal head diameter of 0.371 inch for concealed fastening for the design loads described in Section R703.4.

ICC-ES Acceptance Criteria (AC-90), Section 3.1 supports the proposal for "Type A" sheets (See also evaluation reports for James Hardie Building Products NER-405, Section 3.1; Mexalit Industrial ER-5139, Section 3; and Certaineed Corporation ESR-1668, Section 6.1. The current Industry standard for flexural strength (bending strength) of exterior flat sheets is Grade II and is verified in manufacturer's product declarations (see Mexalit Technical Data Sheet) or evaluation report (see James Hardie Building Products NER-405, Section 3.1).

Designing joints within the context of IRC Section R703.1, "General" Exterior Covering, is currently described in Section R703.1. This section allows for alternate designs via compliance testing to ASTM E 331. As a consequence, joint designs complying with ASTM E 331 would substantiate the exceptions under Section R703.1 thereby allowing for a code compliant installation.

Bibliography:

ASTM C1186-02, Standard Specification for Flat Non-Asbestos Fiber-Cement Sheets.

ASTM E331-00, Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference

ASTM F1667-03, Specification for Driven Fasteners, Nails, Spikes, and Staples.

ICC-ES (AC90) Acceptance Criteria for Fiber Cement Siding used as Exterior Wall Siding.

Certaineed Corporation ESR Report ESR-1668

James Hardie Building Products Legacy Report NER-405

Mexalit Industrial Legacy Report ER-5139

North Pacific (MaxiPanel® & MaxiPlank®) Cement Fiber Siding Technical Data

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

Public Hearing Results

PART I – IBC FIRE SAFETY

Committee Action:

Approved as Submitted

Committee Reason: The committee indicated that expanding the technical definitions of panel siding and lap siding was appropriate because they provide for more understandable definitions.

Assembly Action:

None

PART II – IRC B/E
Committee Action:

Approved as Submitted

Committee Reason: This change corrects errors and provides additional flashing and fastening options for fiber-cement siding.

Assembly Action:

None

Final Hearing Results

FS182-07/08, Part I AS
FS182-07/08, Part II AS

Code Change No: FS183-07/08

Original Proposal

Section: 1406.2.2

Proponent: Andy Williams, Alcan Composites USA, Inc.

Revise as follows:

1406.2.2 (Supp) Architectural trim Type I, II, III, and IV construction. ~~On buildings of Type I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of wood where permitted by in accordance with Section 1405.4, or other equivalent combustible material, complying with the following limitations:~~

- ~~1. Combustible exterior wall coverings, other than fire-retardant treated wood complying with Section 2303.2 for exterior installation, shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less.~~
- ~~2. Combustible architectural trim shall be limited to three stories or 40 feet (12 192 mm) in height above grade plane. Noncombustible materials shall be permitted to be of any height provided the materials are secured to the wall with metal or other approved noncombustible brackets.~~

Exception: ~~Combustible architectural trim exterior wall coverings constructed of fire-retardant treated wood complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the fire separation distance is 5 feet (1524 mm) or less and shall be permitted up to four stories or 60 feet in height above grade plane regardless of the fire separation distance.~~

Reason: The purpose of this code change proposal is to further clarify this section which was revised during the last code development cycle. In our opinion this does not change the technical provisions. We believe these revisions will make this section more user friendly as well. It has been reformatted so that the two conditions where combustible exterior wall coverings and/or trim are allowed are clearly delineated. The title is modified to assist the user to understand that its intent is to apply to those types of construction that have noncombustible exterior walls. This section also deals with more than architectural trim as it contains criteria for exterior wall coverings which include architectural trim. The exception has then been combined to apply to the entire section for fire-retardant-treated wood. And, finally, the sentence allowing noncombustible materials of any height has been deleted. It is unnecessary since this section is only dealing with the allowable use of combustible exterior wall coverings and trim on buildings required to have noncombustible exterior walls.

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

Public Hearing Results

Committee Action:

Approved as Modified

Modify the proposal as follows:

1406.2.2 (Supp) Type I, II, III, and IV construction. On buildings of Type I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of wood in accordance with Section 1405.4, or other equivalent combustible material, complying with the following limitations:

1. Combustible exterior wall coverings, shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less.
2. Combustible architectural trim shall be limited to three stories or 40 feet (12 192 mm) in height above grade plane.
3. ~~Exception:~~ Combustible exterior wall coverings constructed of fire-retardant treated wood complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the fire separation distance is 5 feet (1524 mm) or less and shall be permitted up to four stories or 60 feet in height above grade plane regardless of the fire separation distance.

Committee Reason: The committee agreed that the reorganization of Section 1406.2.2 was more understandable and did not change the technical requirements. The modification clarified that the language in the exception was not really an exception and could simply be identified as another item in the list (#3).

Assembly Action:

None

Final Hearing Results

FS183-07/08

AM

Code Change No: **FS185-07/08**

Original Proposal

Section: 1407.8

Proponent: Andy Williams, Alcan Composites USA, Inc.

Revise as follows:

1407.8 Fire-resistance rating. Where MCM systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 704, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: MCM systems not containing foam plastic insulation, which are installed on the outer surface of a fire-resistance rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly, shall not be required to comply with this section.

Reason: A new exception is being proposed to this section which currently requires that sufficient evidence be submitted to the building official to indicate that the required fire-resistance rating of the exterior wall to which the MCM system is applied is not adversely affected by the installation of the MCM system. The proposed exception is intended to address those situations where the MCM system does not contain foam plastic insulation and is installed onto the outer surface of the fire-resistance rated exterior wall so that the attachments to the wall do not penetrate through the entire wall assembly to the interior face where the attachments could be exposed to a fire condition inside the building.

We have proposed to exclude systems containing foam plastic insulation on the exterior face of exterior walls since they pose unique conditions that definitely require an engineering analysis or additional fire testing to verify that such an installation would not unduly impair the required fire-resistance rating of the exterior wall. However, for the typical MCM system wherein the MCM panel is "thermally thin", and contains minimal combustible mass, there should be no significant impact on the fire-resistance rating of the exterior wall, especially if the fire-resistance is required to be determined from the exterior side. For the interior side, there will be adequate heat dissipation on the unexposed surface, which in this case would be the exterior surface of the wall on which the MCM system is installed, since the MCM system has no significant insulation qualities. Thus, the main concern is that there are no through connections made when the system is attached to the exterior wall such that there would be a direct path for heat from an interior fire to penetrate the wall and pass through to the exterior surface.

In our opinion, attaching an MCM system to a fire-resistance rated exterior wall is not significantly different than attaching an interior finish wall panel to a fire-resistance rated interior wall such as the interior face of an exterior bearing wall, for example. Traditionally, there's been no need to provide additional evaluation of such installations to determine if the fire-resistance rating of the interior wall is maintained or otherwise not adversely impacted by the installation of the interior finish material. Therefore, we believe that this exception is a reasonable approach to allowing certain types of MCM systems to be installed on fire-resistance rated exterior walls without requiring an engineering evaluation or additional fire testing to verify that the fire-resistance rating is not adversely affected by such installation.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this exception is technically feasible and provides a reasonable option to allow certain applications of metal composite material on fire-resistance rated exterior walls without having to justify to the code official that the rating is maintained.

Assembly Action:

None

Final Hearing Results

FS185-07/08

AS

Code Change No: **FS186-07/08**

Original Proposal

Section: 1407.9

Proponent: Robert McCluer, RMc Code Consulting, representing Metal Construction Association

Revise as follows:

1407.9 (Supp) Surface-burning characteristics. Unless otherwise specified, MCM shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested ~~as an assembly~~ in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723.

Reason: Over the years, there has been a significant amount of confusion about what is the intent of this section regarding what actually needs to be tested. Use of the term "assembly" has led to questions regarding the extent to which attachments, substrate, framing, and the aluminum profiles should be provided for testing in the same manner the MCM panels are installed on a building. This section is only intended to evaluate the surface burning characteristics of the cladding material. Many of the attachment systems are not able to be installed within the space limitations of the ASTM E84 apparatus. Thus the need for clarity in application.

For the purpose of testing the surface burning characteristics of the MCM to determine its acceptability for use on the exterior of buildings required to be constructed of noncombustible materials, it should only be necessary to test the MCM using a typical joinery method or system when the MCM's are installed end to end in the tunnel furnace used in ASTM E84. There is no technical reason to include the framing system, substrates, and structural attachments on the back side of the MCM for an exterior wall application when these framing/attachment elements are not required for wall panels used as interior finish when they are tested to ASTM E84 as required in Chapter 8. Specifically, Section 803.1.1 requires interior wall finish to be tested in accordance with ASTM E84. ASTM E84 specifies that the test specimen sections (panels) be joined or butted end-to-end using mounting methods specified therein or in Appendix X1. This should also be adequate for testing MCM which are intended to be used on exterior walls.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this section is only intended to evaluate the surface burning characteristics of the MCM cladding material. Many of the attachment systems are not able to be installed within the space limitations of the ASTM E84 apparatus.

Assembly Action:

None

Final Hearing Results

FS186-07/08

AS

Code Change No: FS187-07/08

Original Proposal

Section: 1407.10.4

Proponent: Robert McCluer, RMc Code Consulting, representing Metal Construction Association

Revise as follows:

1407.10.4 Full-scale tests. The MCM ~~exterior wall assembly~~ 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.

Reason: The term “MCM exterior wall assembly” is not a defined term. Interpretation of this term has led to confusion regarding the level of detail reported when an MCM system is tested in accordance with NFPA 285. Changing the term to “MCM system” provides better guidance for the building official of what was tested so that a comparison can be made to what is being proposed for construction. This also makes the terms in this section internally consistent since “MCM system” is used in the second sentence.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the term “MCM exterior wall assembly” is not a defined term and changing the term to “MCM system” provides better guidance for the building official of what was tested so that an appropriate comparison can be made to what is being proposed for construction.

Assembly Action:

None

Final Hearing Results

FS187-07/08

AS

Code Change No: FS188-07/08

Original Proposal

Section: 1407.13 (New)

Proponent: Robert McCluer, RMc Code Consulting, representing Metal Construction Association

Add new text as follows:

1407.13 Foam plastic insulation. MCM systems containing foam plastic insulation shall also comply with the requirements of Section 2603.

(Renumber subsequent section)

Reason: Although Section 1407.1.1 does not allow the plastic core of MCM to contain foam plastic insulation, the MCM system installed on the exterior wall of a building may indeed contain foam plastic insulation to satisfy the insulation requirements of the Energy Code, for example. In that case, it is critical that the wall system meet the requirements of Section 2603 which address the use of foam plastic insulation in or on exterior

walls. This is even more critical for buildings where the exterior walls are required to be of noncombustible construction which are regulated by Section 2603.5 Exterior Walls of Buildings of Any Height. Thus, this code change proposal simply provides a user friendly cross-reference to Section 2603 to make sure the designer realizes that an MCM system which utilizes foam plastic insulation also needs to comply with Section 2603.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that this proposal appropriately sends the code user to Section 2603 for MCM systems containing foam plastic materials.

Assembly Action:

None

Final Hearing Results

FS188-07/08

AS

Code Change No: FS192-07/08

Original Proposal

Section: 2605.2

Proponent: Marcelo M. Hirschler, GBH International, representing American Fire Safety Council

Revise as follows:

2605.1 Interior use. Where used within a building, plastic veneer shall comply with the interior finish requirements of Chapter 8.

2605.2 Exterior use. Exterior plastic veneer, other than plastic siding, shall be permitted to be installed on the exterior walls of buildings of any type of construction in accordance with all of the following requirements:

1. Plastic veneer shall comply with Section 2606.4.
2. Plastic veneer shall not be attached to any exterior wall to a height greater than 50 feet (15 240 mm) above grade.
3. Sections of plastic veneer shall not exceed 300 square feet (27.9 m²) in area and shall be separated by a minimum of 4 feet (1219 mm) vertically.

Exception: The area and separation requirements and the smoke-density limitation are not applicable to plastic veneer applied to buildings constructed of Type VB construction, provided the walls are not required to have a fire-resistance rating.

2605.3 Plastic siding. Plastic siding shall comply with the requirements of Sections 1404 and 1405.

Reason: Plastic siding should meet the requirements of the corresponding standard specifications and not the requirements of light-transmitting plastics shown in 2606.4. This is simply clarification but would prevent confusion.

The definitions of exterior wall covering and of veneer are almost interchangeable. Therefore, it is possible that someone might interpret that vinyl siding (or polypropylene siding) are plastic veneers and can meet the requirements of 2606.4. See as follows:

EXTERIOR WALL COVERING. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments such as cornices, soffits, fascias, gutters and leaders.

VENEER. A facing attached to a wall for the purpose of providing ornamentation, protection or insulation, but not counted as adding strength to the wall.

VINYL SIDING. A shaped material, made principally from rigid polyvinyl chloride (PVC), that is used as an exterior wall covering.

POLYPROPYLENE SIDING. A shaped material, made principally from polypropylene homopolymer, or copolymer, which in some cases may contain fillers and/or reinforcements, that is used to clad exterior walls of buildings.

Cost Impact: This proposal should not affect the cost of construction.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that as a point of clarification the code user should be aware that plastic siding is required to meet the requirements of the corresponding standard specifications and not the requirements of light-transmitting plastics shown in 2606.4; therefore reference to Section 1404 and 1405 for plastic siding is appropriate.

Assembly Action:

None

Final Hearing Results

FS192-07/08

AS

Code Change No: FS194-07/08

Original Proposal

Section: 2606.7

Proponent: Sarah A. Rice, CBO, Schirmer Engineering Corporation

Revise as follows:

2606.7 Light-diffusing systems. Unless the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, light-diffusing systems shall not be installed in the following occupancies and locations:

1. Group A with an occupant load of 1,000 or more.
2. Theaters with a stage and proscenium opening and an occupant load of 700 or more.
3. Group I-2.
4. Group I-3.
5. ~~Exit stairways~~ Vertical exit enclosures and exit passageways.

Reason: Editorial in nature but needed so that ramps, when used as an exit and located in an enclosure are included.

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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee agreed that the change was editorial in nature but was required so that ramps, when used as an exit and located in an enclosure were included as part of the requirements for light-diffusing systems.

Assembly Action:

None

Final Hearing Results

FS194-07/08

AS

Code Change No: **FS196-07/08**

Original Proposal

Sections: 2602, 2612 (New)

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing American Composites Manufacturers Association

1. Delete without substitution:

**SECTION 2602
DEFINITIONS**

REINFORCED PLASTIC, GLASS FIBER. Plastic reinforced with glass fiber having not less than 20 percent of glass fibers by weight.

2. Add new definitions as follows:

**SECTION 2602
DEFINITIONS**

FIBER REINFORCED POLYMER. A polymeric composite material consisting of reinforcement fibers impregnated with a fiber-binding polymer which is then molded and hardened.

FIBERGLASS REINFORCED POLYMER. A polymeric composite material consisting of glass reinforcement fibers impregnated with a fiber-binding polymer which is then molded and hardened.

3. Add new text as follows:

**SECTION 2612
FIBER REINFORCED POLYMER AND FIBERGLASS REINFORCED POLYMER**

2612.1 General. The provisions of this section shall govern the requirements and uses of fiber reinforced polymer or fiberglass reinforced polymer in and on buildings and structures.

2612.2 Labeling and identification. Packages and containers of fiber reinforced polymer or fiberglass reinforced polymer and their components delivered to the job site shall bear the label of an approved agency showing the manufacturer's name, the product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

2612.3 Interior finish. Fiber reinforced polymer or fiberglass reinforced polymer used as interior finish shall comply with Chapter 8.

2612.4 Decorative materials and trim. Fiber reinforced polymer or fiberglass reinforced polymer used as decorative materials or trim shall comply with Section 806.

2612.5 Light transmitting materials. Fiber reinforced polymer or fiberglass reinforced polymer used as light transmitting materials shall comply with Sections 2606 through 2611 as required for the specific application.

2612.6 Exterior use. Fiber reinforced polymer or fiberglass reinforced polymer shall be permitted to be installed on the exterior walls of buildings of any type of construction when they meet the requirements of Sections 2603.5 and is fire-blocked in accordance with Section 717. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.

Exceptions:

1. When all of the following conditions are met:
 - 1.1. When the area of the fiber reinforced polymer or the fiberglass reinforced polymer does not exceed 20% of the respective wall area, the fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame-spread index of 25 or less or when the area of the fiber reinforced polymer or the fiberglass reinforced polymer does not exceed 10% of the respective wall area, the fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame-spread index of 75 or less. The flame-spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer or the fiberglass reinforced polymer
 - 1.2. Fireblocking complying with Section 717.2.6 shall be installed.
 - 1.3. The fiber reinforced polymer or the fiberglass reinforced polymer shall be installed directly to a noncombustible substrate or be separated from the exterior wall by one of the following materials: corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm) at any point, Aluminum having a minimum thickness of 0.019 inch (0.5 mm) or other approved noncombustible material.
 - 1.4. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.
2. When installed on buildings that are 40 feet (12,190 mm) or less above grade, the fiber reinforced polymer or the fiberglass reinforced polymer shall meet the requirements of Section 1406.2 and shall comply with all of the following conditions:
 - 2.1. Where the fire separation distance is 5 feet (1524 mm) or less, the area of the fiber reinforced polymer or the fiberglass reinforced polymer shall not exceed 10% of the wall area Where the fire separation distance is greater than 5 feet (1524 mm) there shall be no limit on the area of the exterior wall coverage using fiber reinforced polymer or the fiberglass reinforced polymer.
 - 2.2. The fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame-spread index of 200 or less. The flame-spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer or the fiberglass reinforced polymer
 - 2.3. Fireblocking complying with Section 717.2.6 shall be installed.
 - 2.4. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.

Reason: The composites industry, material suppliers and manufacturers are working together to introduce FRP composites into the International Building Code. This activity is being conducted under the auspices of the American Composites Manufacturers Association (ACMA), by a collective group of companies focused on the building and construction market. The proposed code change to the IBC in this submittal will help building officials recognize FRP composites and ensure they are being properly used in building construction.

ACMA, headquartered in Arlington, VA is the national trade association representing the composites industry. ACMA is the world's largest composites trade association, with more than 850 member companies, comprising manufacturers, materials and equipment suppliers, distributors, consultants, academia, end-users and other industry stakeholders. Formed in 1979 to provide education and support for composites fabricators and their suppliers in the successful operation of their businesses, ACMA continues to offer leading-edge services that are instrumental in regulatory compliance and formulation, education, training, market development and expansion.

Fiber reinforced polymer (FRP) composites are materials consisting of reinforcement fibers (natural or man-made) impregnated with a fiber-binding polymer (thermoset or thermoplastic) and are then molded and hardened into the intended shape. The reinforcement fibers (such as boron, glass, carbon, aramid) impart strength and stiffness to the composite, while the polymer resin matrix bind the fibers, providing bulk stiffness and protects them from environmental exposure. Common terms associated with FRP composites include fiberglass or fiber reinforced plastic, GFRP (glass fiber) or CFRP (carbon fiber).

Since the mid-1950s, FRP has been adapted to building and construction uses. In historical sequence, these applications have appeared as opaque and translucent (light transmitting) sheet panels; space frame skin structures; structural forms for concrete; sandwich panel structures; and most recently a variety of highly-configured load-bearing and non-load bearing components. Since the early 1990's, FRP composites are being used to externally strengthen concrete and masonry buildings, as well as providing seismic strengthening to beams, columns, slabs, and walls.

Typical FRP architectural products are manufactured in an open mold. The mold surface, which imparts the finished appearance to the completed part, is first coated with a pigmented, specially formulated, durable polyester coating known as gel coat. Various plies of resin saturated fiber reinforcements are added by a technique known as hand lamination or by using spray equipment. Both processes deposits fibers and catalyzed resin onto the gel coated mold surface. The material is then hand compacted by hand rollers and is usually cured at room temperature.

Additives and various fillers, incorporated in the composites enable fabricators to provide finished products with special properties such as resistance to ultra-violet radiation, enhanced fire performance, corrosion-resistance, and color.

Principal markets served by the composites industry are architectural/construction such as replication of historic building ornamentation, bathware, marine, automotive/transportation, corrosion resistant products (tanks and piping) and many others. These products are increasingly being used as building materials and responsible Code guidance is imperative.

This proposed code change provides two definitions, one a generic definition for Fiber Reinforced Polymer and one for a Fiberglass Reinforced Polymer which is a subset of the generic definition. Both are included since both could be used in the applications under consideration. These definitions are industry standard descriptions for these types of materials.

CODE CHANGES RESOURCE COLLECTION – INTERNATIONAL BUILDING CODE

The proposal also adds a new section to Chapter 26 that is specifically written for FRP. The proposal will require that the FRP be labeled and identified in a manner similar to the existing requirements for foam plastic insulation. This requirement will provide assurance to the Code Official that the product in the field is the same as that tested for compliance.

Proposal Sections 2612.3 through 2612.5 provide requirements wherein the FRP must meet existing Code requirements for materials to be used in these specific applications. No changes in required tests, usage, etc. are made for the FRP versus other materials used for these applications.

Section 2612.6 provides new requirements that specifically address the use of the FRP on the exterior of buildings. This Section would allow the FRP to be used on the exterior of buildings of all Types of Construction when it meets specific requirements.

The general charging requirements are that the FRP meet the requirements of Section 2603.5, the requirements for fireblocking per Section 717 and other structural requirements. Section 2603.5 addresses the use of foam plastics in exterior walls of all Types of Construction. By using the requirements in this Section, the FRP must meet tests such as NFPA 285 (Multi-story fire test), NFPA 268 (Radiant Heat test) and have Class A Flame-spread and Smoke-developed Indices as well as meeting other requirements specified in Section 2603.5. As with foam plastics, if a material can meet these requirements, it can be used as an exterior wall covering on buildings of any Type of Construction.

There are two exceptions to the general requirements. The first is for when the FRP is used as building ornamentation such as cornices. An example of this is provided in the picture below (The cornice is FRP installed on a masonry wall). This set of requirements limits the size of the ornamentation and its Flame-spread Index based on the percentage of the material on the wall. The area restrictions are based potential applications and the philosophy that when larger amounts of materials are installed, the fire properties shall be more restrictive. Requirements are also provided whereby the FRP shall be installed over noncombustible surfaces, fireblocking is required and the design of the installation meets required structural conditions. This set of requirements provides assurances that the materials to be used in this application are appropriate for use and do not create any undue hazard.

The second exception recognizes that the FRP can be used on building up to a height of 40 feet in a manner consistent with other combustible exterior wall coverings. Additionally limits with respect to fire separation distance are also provided in a manner similar to that for MCM panels. Further requirements for fireblocking and structural considerations have also been included.

In summary, this proposal provides recognition of FRP for many building applications and includes appropriate requirements to allow their use in a manner intended by the Code.



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

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: The committee indicated that the proposed requirements for fiber reinforced polymer and fiberglass reinforced polymer are technically accurate and complete. The products are also currently widely in use. Therefore the proposed provisions for fiber reinforced polymer and fiberglass reinforced polymer are an appropriate addition to the code.

Assembly Action:

None

Final Hearing Results

FS196-07/08

AS

Code Change No: **FS198-07/08**

Original Proposal

Chapter 35

Proponent: Standards writing organizations as listed below.

Revise as follows:

ACI

American Concrete Institute
P. O. Box 9094
Farmington, MI 48333-9094

216.1—07 97

Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard
reference
number

Title

C 140—07 05a

Test Method Sampling and Testing Concrete Masonry Units and Related Units

C 549—06 02

Specification for Perlite Loose Fill Insulation

C 578—07 04

Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

C 636/C636M—06 04

Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels

C 1186—07 02

Specification for Flat Nonasbestos Fiber Cement Sheets

C 1289—07 05a

Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

D 43—00(2006) 94 (2000)

Specification for Coal Tar Primer Used in Roofing, Dampproofing and Waterproofing

D 3462—07 05

Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules

D 3679—06a 05

Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding

E 108—07a 05

Test Methods for Fire Tests of Roof Coverings

E 84-07 05e01

Test Methods for Surface Burning Characteristics of Building Materials

E 96/E96M-0500e04

Test Method for Water Vapor Transmission of Materials

E 119-07 00

Test Methods for Fire Tests of Building Construction and Materials

E 814—06 02

Test Method of Fire Tests of Through-penetration Firestops

F 2090— 01a(2007)

Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms

DASMA

Door and Access Systems Manufacturers Association International
1300 Summer Avenue
Cleveland, OH 44115-2851

Standard
reference
number

Title

107—98 04 (03)

Room Fire Test Standard for Garage Doors Using Foam Plastic Insulation

FM

Factory Mutual
Standards Laboratories Turnpike
1151 Boston-Providence
Norwood, MA 02062

Standard
reference
number

Title

4880 (2005+)

American National Standard for Evaluating Insulated Wall or Wall and Roof/Ceiling Assemblies, Plastic Interior Finish Materials, Plastic Exterior Building Panels, Wall/Ceiling Coating Systems, Interior and Exterior Finish Systems

GA

Gypsum Association
810 First Street, NE #510
Washington, DC 20002-4268

Standard
reference
number

Title

GA 600— 06 03

Fire-Resistance Design Manual, 18 47th Edition

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02269-9101

Standard
reference
number

Title

80—07 99

Fire Doors and Fire Windows

105—07 03

Standard for the Installation of Smoke Door Assemblies

257- 07 00

Standard on Fire Test for Window and Glass Block Assemblies

265—07 02

Method of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings on Full Height Panels and Walls

268—07 04

Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source

288-07 04

Standard Methods of Fire Tests of Floor Fire Door Assemblies Installed Horizontally in Fire-Resistance-Rated Floor Systems

UL

Underwriters Laboratories
333 Pfingsten Road
Northbrook, IL 60062

Standard
reference
number

Title

14C—2006 99

Swinging Hardware for Standard Tin Clad Fire Doors Mounted Singly and in Pairs

103—01

Factory-built Chimneys, for Residential Type and Building Heating Appliances with Revisions through December 2005 June 2006

127—96

Factory-built Fireplaces—with Revisions through November 2006 4999

555— 2006 99

Fire Dampers

555C—2006 96

Ceiling Dampers

555S— 99	Smoke Dampers—with Revisions through April 2003 July 2006
710B—2004	Recirculating Systems with <u>Revisions through April 2006</u>
790—04 98	<u>Standard Tests Methods for Fire Tests Resistance-of Roof Coverings Materials</u>
1256—02	Fire Test of Roof Deck Construction – <u>with Revisions through January 2007</u>
1479—03	Fire Tests of Through-Penetration Fire stops— <u>with Revisions through April 2007</u>

Reason: The *CP 28 Code Development Policy*, Section 4.5* requires the updating of referenced standards to be accomplished administratively, and be processed as a Code Change Proposal. In May 2007, a letter was sent to each developer of standards that is referenced in the International Codes, asking them to provide ICC with a list of their standards in order to update to the current edition. Above is the received list of the referenced standards that are under the maintenance responsibility of the IBC Fire Safety Committee.

***4.5 Updating Standards:** The updating of standards referenced by the Codes shall be accomplished administratively by the appropriate code development committee in accordance with these full procedures except that multiple standards to be updated may be included in a single proposal.

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: This is simply an administrative update, therefore the committee recommends approval.

Assembly Action:

None

Final Hearing Results

FS198-07/08

AS