2006 INTERNATIONAL FIRE CODE DOCUMENTATION
IBC - FIRE SAFETY

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 (279m^2) 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 m^2).

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 1$_1$/$_2$ 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 3/4 hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the fire separation distance between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm).

Exceptions:

1. Opening protectives are not required where the roof ~~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~~ assembly, the ceiling membrane is not required to be installed over unusable crawl spaces. In 1-hour fire-resistance-rated roof ~~construction~~ assembly, 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~~ assembly 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.

805.1.2Wood 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~~ assembly.

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: 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 mm^2) in any 100 square feet (9.3m^2) 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 mm^2) in area, provided the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29m^2) 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: 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/m^2; Peak Avg Ceiling Temp 805^{o}C, 1481^{o}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

FS165-07/08, Part I	**AM**
FS165-07/08, Part II	**AS**