

2006/2007 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE — FIRE SAFETY

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TENTATIVE ORDER OF DISCUSSION

2006-2007 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE

FIRE SAFETY

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

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

G55-06/07	FS40-06/07, Part I	FS86-06/07	FS132-06/07
G56-06/07	FS41-06/07	FS87-06/07	FS133-06/07
FS1-06/07	FS42-06/07	FS88-06/07	FS134-06/07
FS2-06/07	FS43-06/07	FS89-06/07	FS135-06/07
FS3-06/07	FS44-06/07	FS90-06/07	FS136-06/07
FS4-06/07, Part I	FS45-06/07	FS91-06/07	FS137-06/07
FS5-06/07	FS46-06/07	FS92-06/07	FS138-06/07
FS6-06/07	FS47-06/07	FS93-06/07	FS139-06/07
FS7-06/07	FS48-06/07	FS95-06/07	FS140-06/07
FS8-06/07, Part I	FS49-06/07	FS96-06/07	FS141-06/07
FS9-06/07	FS51-06/07	FS97-06/07	FS142-06/07
FS10-06/07, Part I	FS52-06/07	FS98-06/07	FS143-06/07
FS11-06/07, Part I	FS53-06/07	FS99-06/07	FS144-06/07
FS12-06/07	FS54-06/07	FS100-06/07	FS145-06/07, Part I
FS13-06/07	FS55-06/07	FS101-06/07	FS146-06/07, Part I
FS14-06/07 Part I	FS56-06/07	FS102-06/07	FS147-06/07
FS15-06/07 Part I	FS57-06/07	FS103-06/07	FS148-06/07
FS73-06/07	FS58-06/07	FS104-06/07	FS149-06/07
FS94-06/07	FS59-06/07 Part I	FS105-06/07	FS150-06/07
FS16-06/07	FS60-06/07	FS106-06/07	FS151-06/07
FS17-06/07	FS61-06/07	FS107-06/07	FS152-06/07
FS18-06/07	FS62-06/07	FS108-06/07	FS153-06/07
FS19-06/07	FS63-06/07	FS109-06/07	FS154-06/07
FS20-06/07	FS64-06/07	FS110-06/07	FS155-06/07
FS21-06/07	FS65-06/07	FS111-06/07	FS156-06/07, Part I
FS22-06/07	FS66-06/07	FS112-06/07	FS157-06/07
FS23-06/07, Part I	FS67-06/07	FS113-06/07	FS158-06/07
FS24-06/07	FS68-06/07	FS114-06/07	FS159-06/07
FS25-06/07	FS69-06/07	FS115-06/07	FS160-06/07
FS26-06/07	FS70-06/07 Part I	FS116-06/07	FS161-06/07
FS27-06/07	FS71-06/07	FS117-06/07	FS162-06/07
FS28-06/07	FS72-06/07	FS118-06/07	F80-06/07, Part II
FS29-06/07	FS74-06/07	FS119-06/07	FS163-06/07
FS30-06/07	FS75-06/07	FS120-06/07	FS164-06/07
FS31-06/07	FS76-06/07	FS121-06/07	FS165-06/07
FS32-06/07	FS77-06/07	FS122-06/07	F121-06/07, Part II
FS33-06/07	FS78-06/07	FS123-06/07	F122-06/07, Part II
FS34-06/07	FS79-06/07	FS124-06/07	G74-06/07, Part II
FS35-06/07	FS80-06/07 Part I	FS125-06/07	FS166-06/07
FS36-06/07	FS81-06/07	FS126-06/07	FS167-06/07
FS37-06/07, Part I	FS82-06/07	FS127-06/07	FS168-06/07
G70-06/07	FS83-06/07 Part I	FS128-06/07	FS169-06/07
FS38-06/07	FS84-06/07	FS129-06/07	FS170-06/07, Part I
FS50-06/07	FS85-06/07	FS130-06/07	EC28-06/07, Part IV
FS39-06/07		FS131-06/07	FS171-06/07

FS172-06/07
FS173-06/07
FS174-06/07
FS178-06/07
FS179-06/07
FS180-06/07
FS181-06/07, Part I
FS182-06/07
FS183-06/07
FS184-06/07
FS185-06/07
FS186-06/07
FS188-06/07, Part I
FS193-06/07, Part I
FS199-06/07 Part I
 G68-06/07
 S38-06/07
 S39-06/07
 S40-06/07
FS215-06/07
FS216-06/07
 F216-06/07, Part II
FS217-06/07
 S110-06/07

FS1-06/07

701.1

Proponent: Bill McHugh, Firestop Contractors International Association

Revise as follows:

701.1 Scope. The provisions of this chapter shall govern the materials and systems assemblies used for structural fire resistance and fire-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings through compartmentation systems.

Reason: The purpose of this code change is to bring the concept of systems and compartmentation into this area of the code. Each component of compartmentation features and structural protection are tested and listed as a total system. The wall, floor, penetrating item (duct, damper, door, glass,) and the materials used are tested and listed as a system.

The code should state that these are systems which points to tested and listed assemblies, rather than simply assemblies. Assemblies alone could be non tested assemblies. Additionally, the scope of this chapter is really compartmentation and structural protection, but never states compartmentation.

The code needs to state that compartmentation is the correct term for 'fire-resistance-rated construction that separates spaces inside a building and to or from the building'.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS2-06/07

701.2 (New)

Proponent: Bill McHugh, Firestop Contractors International Association

Add new text as follows:

701.2 Modifications. No person shall remove or modify any fire-resistance-rated construction, compartmentation and structural fire resistance systems installed or maintained under the provisions of this code or the *International Fire Code* without approval by the building official

Reason: The purpose of this code change is to give the building official an additional enforcement tool for the provisions of Chapter 7, which are now very important in buildings where it is used.

Fire-resistance-rated construction, compartmentation and structural fire protection systems are critical fire and life safety items in buildings. There is no reference to the building official required involvement in removal of this critical protection in buildings.

Building alterations take place during the life cycle of the building. This brings the building official into the communications when changes are made to compartmentation and structural protection, consistent with other sections of this code.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS3-06/07

701.3 (New)

Proponent: Bill McHugh, Firestop Contractors International Association

Add new text as follows:

701.3 Acceptance Tests. Fire-resistance-rated construction, compartmentation and structural fire resistance systems shall be tested in accordance with the requirements of this code and the International Fire Code. When required, the tests shall be conducted in the presence of the building official. Tests required by this code, the International Fire Code and the standards listed in this code shall be conducted at the expense of the owner or the owners representative. It shall be unlawful to occupy portions of a structure until the required fire-resistance-rated construction, compartmentation and structural fire protection systems within that portion of the structure have been tested and approved.

Reason: The purpose of this code change is to add general language for requirements, already in other chapters of the code, to this chapter.

No general statement outlines the important acceptance tests that are required under the code for fire and life safety in structural fire protection and compartmentation systems.

This code change completes the section consistent with other sections in the code.

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

Analysis: Is this section more appropriate for inclusion in Section 703?

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS4-06/07

702.1, 702.3, 602.1

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

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Add new definition as follows:

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.

BUILDING ELEMENT: A fundamental component of building construction which may or may not be of fire-resistance-rated construction and which is constructed of materials based on the building type of construction.

2. Revise as follows:

703.2 Fire-resistance ratings. The fire-resistance rating of building elements shall be determined in accordance with the test procedures set forth in ASTM E 119 or in accordance with Section 703.3. Where materials, systems or devices that have not been tested as part of a fire-resistance rated assembly are incorporated into the assembly, sufficient data shall be made available to the building official to show that the required fire-resistance rating is not reduced. ~~Materials and methods of construction used to protect joints and penetrations in fire-resistance-rated building elements shall not reduce the required fire-resistance rating.~~

Exception: In determining the fire-resistance rating of exterior bearing walls, compliance with the ASTM E 119 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases is required only for a period of time corresponding to the required fire-resistance rating of an exterior nonbearing wall with the same fire separation distance, and in a building of the same group. When the fire-resistance rating determined in accordance with this exception exceeds the fire-resistance rating determined in accordance with ASTM E 119, the fire exposure time period, water pressure, and application duration criteria for the hose stream test of ASTM E 119 shall be based upon the fire-resistance rating determined in accordance with this exception.

PART II – IBC GENERAL

Revise as follows:

602.1 General. Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a fire-resistance rating not less than that specified in Table 601 and exterior walls shall have a fire-resistance rating not less than that specified in Table 602. Where required to have a fire-resistance rating by Table 601, building elements shall comply with the applicable provisions of Section 703.2. The protection of openings, penetrations, joints and ducts and air transfer openings in building elements shall not be required unless required by other provisions of this code.

Reason: The International Building Code provides a considerable level of detail for the requirements of fire-resistance-rated assemblies. Currently, only Section 602.1 provides technical charging language for the fundamental building elements listed in Table 601. There are many misunderstood details associated with the application of Table 601. Most deal with fire-resistance rated construction requirements. For example, many assume that opening protection is inherently required when Table 601 specifies that a building element be of fire-resistance rated construction. The protection of openings, however, triggers off of the requirement for a given assembly such as a fire wall, fire barrier, exterior wall, etc. This is somewhat counterintuitive for those lacking experience in the application of the provisions of the IBC. Additionally, there are those who attempt to apply fire barrier or fire partition requirements to simple building elements that are required to be of fire-resistance rated construction. Although Section 703.2 states, "The fire-resistance rating of building elements shall be determined in accordance with the test procedures set forth in ASTM E 119..." that provision is often overlooked.

Accordingly, fundamental charging language has been provided to assist in the proper determination of construction requirements for basic building elements. This includes an appropriate cross reference to Section 703.2. Additionally, a general statement addressing the continuity of building elements is introduced. This proposed language is consistent with the charging language currently provided in Section 715.1, which states, "Opening protectives required by other sections of this code shall comply with the provisions of this section." It is recognized that each portion of the proposed language is currently contained in the IBC. Nevertheless, the proposed language will provide code users with a construction base line for simple building elements as opposed to formal fire-resistance rated assemblies. Additionally, it is felt that the ultimate sentence in Section 703.2 is

redundant and somewhat out of context. The proposed language in Section 602.1 properly addresses the continuity issue. And perhaps most importantly, the charging provisions of Sections 712 and 713 clearly describe the continuity requirements for fire-resistance rated construction. Lastly, a definition of BUILDING ELEMENT is created. It is largely intended to raise the awareness of the term while providing for initial construction provisions.

Approval of this proposal will greatly assist design professionals and code enforcement officials in the proper application of these fundamental and essential International Building Code provisions, especially those individuals with minimal experience.

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

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC GENERAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS5–06/07 702.1

Proponent: Vickie Lovell representing Air Movement and Control Association and 3M Company

Add new definitions as follows:

VENT. A pipe or conduit composed of factory made components, containing a passageway for conveying products of combustion, or for gases or vapors from plumbing vent systems, to the outside atmosphere.

AIR TRANSFER OPENING. An hole or unducted opening in an assembly, unenclosed by any duct work, intended to permit the movement of air between adjacent rooms or spaces.

DUCTED OPENING. A hole or opening that is created by the penetration of a floor or wall assembly by a duct that is component of the HVAC system..

DUCTED SYSTEM. A ducted system that is constructed of sheet metal no less than 26 gage thickness and is continuous from the air handling appliance or equipment to the air outlet and inlet terminals.

Reason: The code uses these undefined terms. These four terms may be used differently in the code than in the vernacular on the job site. Openings and penetrations to be protected must be clarified in order to ensure that the proper protection methods are used.

1. Vents for fuel gas exhaust are described in detail in the IFGC. Vents for sewage and similar purposes are described in detail within the IPC. However, ducts for dryer, bathroom, and toilet exhaust are generically referenced in the IBC and described in detail as environmental exhaust ducts in the IMC.

Although the term “dryer vent” or “bathroom vent” may be commonly used in the field, the references to “vents” in Chap 7 do not apply to environmental exhaust ducts, such as dryer, bathroom and toilet room exhaust. The references to the protection of vents that penetrate a floor assemblies in Chapter 712 are intended to apply to sanitary, chemical waste or similar type vents

2. An air transfer opening is a hole or opening in an assembly intended to permit the free movement of air between adjacent spaces, and does not have any duct work. The opening is not required to have any specific architectural or cosmetic feature. However, such openings may be required to be protected by sections of the code with a smoke damper that is intended to activate during a fire event, or for some other emergency situation that requires control of air movement.

3. A ducted opening is a hole or opening that is created by the penetration of a floor or wall assembly by a duct and may be required to be protected with a smoke damper, fire damper or a combination fire damper, depending on the assembly penetrated. Both air transfer openings and ducted openings may be permitted to be unprotected by the code when other features are in effect.

4. This definition of a ducted system is extracted from the 2003 IMC 607.5.2 #3. The design of a ducted system implies structural integrity of the ducts in the HVAC system. In order to justify the exceptions for fire dampers in IBC section 716.5.2 Exception 3 and IMC 607.5.2 #, the ducted system should be a continuous metal barrier originating at the air handler without openings, including plenums, and interstitial spaces, until the duct terminates at the air outlet and inlet terminals. Openings in a ducted system are not permitted to communicate adjacent spaces or rooms on either side of a wall assembly penetrated by the duct where the exception for fire damper in fire barriers and fire partitions is applied.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS6–06/07 702.1 (New)

Proponent: Bill McHugh, Firestop Contractors International Association

Add new definition as follows:

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.

COMPARTMENTATION. Fire-and smoke-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings.

Reason: Currently, there is no definition in Chapter 7 for Compartmentation, an important concept in the code. The code definitions must reflect important terms in the code, such as compartmentation.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS7–06/07
702.1 (IFC 902.1)

Proponent: Greg Rogers, Kitsap Fire District 7, representing ICC Joint Fire Service Review Committee

Revise definition as follows:

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: Sprinkler and fire alarm requirements in Chapter 9 of the IBC and IFC are based on the square footage or occupant load of a fire area. It is not clear from the definition of a fire area that building areas without surrounding walls are included in the fire area. This concept is clear in the definition of building area found in IBC 502.1, "Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above". This was confirmed by IFC Interpretation No. 25-05, dated 09-12-05.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS8–06/07
702.1; IMC 506.3.10

Proponent: Bob Eugene, Underwriters Laboratories Inc.

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IMC CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise definitions as follows:

F RATING. The time period that the through-penetration firestop system limits the spread of fire through the penetration when tested in accordance with ASTM E 814 or UL 1479.

T RATING. The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise to 325°F (163°C) above its initial temperature through the penetration on the nonfire side when tested in accordance with ASTM E 814 or UL 1479.

THROUGH-PENETRATION FIRESTOP SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated to resist for a prescribed period of time the spread of fire through penetrations. The F and T rating criteria for penetration firestop systems shall be in accordance with ASTM E 814 or UL 1479. See definitions of "F rating" and "T rating."

PART II – IMC

506.3.10 Grease duct enclosure. A grease duct serving a Type I hood that penetrates a ceiling, wall or floor shall be enclosed from the point of penetration to the outlet terminal. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the *International Building Code*. Ducts shall be enclosed in accordance with the *International Building Code* requirements for shaft construction. The duct enclosure shall be sealed around the duct at the point of penetration and vented to the outside of the building through the use of weather-protected openings. Clearance from the duct to the interior surface of enclosures of combustible construction shall be not less than 18 inches (457 mm). Clearance from the duct to the interior surface of enclosures of noncombustible construction or gypsum wall board attached to noncombustible structures shall be not less than 6 inches (152 mm). The duct enclosure shall serve a single grease exhaust duct system and shall not contain any other ducts, piping, wiring or systems.

Exceptions:

1. The shaft enclosure provisions of this section shall not be required where a duct penetration is protected with a through-penetration firestop system classified in accordance with ASTM E 814 or UL 1479 and having an “F” and “T” rating equal to the fire-resistance rating of the assembly being penetrated and where the surface of the duct is continuously covered on all sides from the point at which the duct penetrates a ceiling, wall or floor to the outlet terminal with a classified and labeled material, system, method of construction or product specifically evaluated for such purpose, in accordance with ASTM E 2336. Exposed ductwrap systems shall be protected where subject to physical damage.
2. The shaft enclosure provisions of this section shall not be required where a duct penetration is protected with a through-penetration firestop system classified in accordance with ASTM E 814 or UL 1479 and having an “F” and “T” rating equal to the fire resistance rating of the assembly being penetrated and where a prefabricated grease duct enclosure assembly is protected on all sides from the point at which the duct penetrates a ceiling, wall or floor to the outlet terminal with a classified and labeled prefabricated system specifically evaluated for such purposes in accordance with UL 2221.
3. A duct enclosure shall not be required for a grease duct that penetrates only a nonfire-resistance-rated roof/ceiling assembly.

Reason: (Part I) The purpose of this code change is to include reference to UL 1479 as an alternate to ASTM E 814 in the definitions Section of Chapter 7 of the International Building Code. UL 1479 is currently referenced for walls in Section 712.3.1.2; for horizontal assemblies in Section 712.4.1.1.2; and for air leakage in smoke barriers in Section 712.5.

Both Standards are referenced together in all other pertinent sections of the International Building Code and the International Residential Code. The fire testing and hose stream testing portions of these two Standards describe the same test method. The specifications for the test apparatus and test procedure are identical between the two standards. As such, identical test results would be obtained from tests conducted using each of these methods.

The inclusion of this alternate test method would provide the authority having jurisdiction with the flexibility to accept listed and labeled products evaluated in accordance with ASTM E 814 or UL 1479.

UL 1479 is an ANSI approved standard. UL 1479 requirements cover through-penetration firestops of various materials and construction that are intended for use in openings in fire resistive wall or floor-ceiling assemblies, or both.

(Part II) The purpose of this code change is to include reference to UL 1479 as an alternate to ASTM E 814 in the International Mechanical Code.

Both Standards are referenced together in all other pertinent sections of the International Building Code and the International Residential Code. The fire testing and hose stream testing portions of these two Standards describe the same test method. The specifications for the test apparatus and test procedure are identical between the two standards. As such, identical test results would be obtained from tests conducted using each of these methods.

The inclusion of this alternate test method would provide the authority having jurisdiction with the flexibility to accept listed and labeled products evaluated in accordance with ASTM E 814 or UL 1479.

UL 1479 is an ANSI approved standard. UL 1479 requirements cover through-penetration firestops of various materials and construction that are intended for use in openings in fire resistive wall or floor-ceiling assemblies, or both.

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

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IMC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS9–06/07

702.3, 703.3, 720.1

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

1. Revise as follows:

703.2 Fire-resistance ratings. The fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E 119 or in accordance with Section 703.3. Where materials, systems or devices that have not been tested as part of a fire-resistance-rated assembly are incorporated into the building element, component or assembly, sufficient data shall be made available to the building official to show that the required fire-resistance rating is not reduced. Materials and methods of construction used to protect joints and penetrations in fire-resistance-rated building elements, components or assemblies shall not reduce the required fire-resistance rating.

Exception: In determining the fire-resistance rating of exterior bearing walls, compliance with the ASTM E 119 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases is required only for a period of time corresponding to the required fire-resistance rating of an exterior nonbearing wall

with the same fire separation distance, and in a building of the same group. When the fire-resistance rating determined in accordance with this exception exceeds the fire-resistance rating determined in accordance with ASTM E 119, the fire exposure time period, water pressure, and application duration criteria for the hose stream test of ASTM E 119 shall be based upon the fire-resistance rating determined in accordance with this exception.

2. Revise as follows:

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

- ~~4.~~ ~~Fire-resistance designs documented in approved sources.~~
- ~~2.~~ 1. Prescriptive designs of fire-resistance-rated building elements, component or assemblies as prescribed in Section 720.
- ~~3.~~ 2. Calculations in accordance with Section 721.
3. ~~Fire-resistance designs documented in approved sources.~~
4. Engineering analysis based on a comparison of building element, component or assemblies designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E 119.
5. Alternative protection methods as allowed by Section 104.11.

3. Revise as follows:

720.1 General. The provisions of this section contain prescriptive details of fire-resistance-rated building elements, component or assemblies. The materials of construction listed in Tables 720.1(1), 720.1(2), and 720.1(3) shall be assumed to have the fire-resistance ratings prescribed therein. Where materials that change the capacity for heat dissipation are incorporated into a fire-resistance-rated assembly, fire test results or other substantiating data shall be made available to the building official to show that the required fire-resistance-rating time period is not reduced.

Reason: Section 703.2 is the genesis for the determination of fire-resistance ratings. The definition of "FIRE-RESISTANCE RATING" in Section 702 properly identifies that fire-resistance ratings apply to building elements, components and assemblies. Unfortunately, that level of detail is lost in several key charging provisions in the IBC. This proposal corrects that situation for a very important reason. For legal and technical reasons it is imperative that the construction component system be formalized so as to recognize and support the notion that there are fundamental building element fire-resistance rating requirements in Chapter 6 which are potentially modified through component and assembly provisions in Chapter 7. Additionally, this clarification will assist code users in the proper application of these fundamental provisions. Towards the goal of user friendliness, the five alternative methods for determining fire resistance in Section 703.3 have been editorially shuffled to reflect the typical order of progression used in the application of alternate methods. Those prescriptive procedures internal to the IBC are now listed first and followed by methods normally requiring external expertise.

Approval of this proposal will improve the technical accuracy of the International Building Code and in doing so will contribute to the proper interpretation and application of these key provisions.

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

Public Hearing: Committee	AS	AM	D
Assembly:	ASF	AMF	DF

FS10-06/07

410.3.5.2, 703.2, 703.2.1, 703.2.3, 703.3, 704.7, 704.9, 706.2.1, 706.7, 711.3.2, 712.3.1, 712.4.1.1, 713.1, 713.4, 714.7, 715.2, 716.5.2 (IMC 607.5.2), 716.5.3 (IMC 607.5.5), 716.6.1 (IMC 607.6.1), 716.6.2 (IMC 607.6.2.1), Table 720.1(1), 1407.10.2, 2103.2, 2603.4, 2603.5.1, Chapter 35 (IMC Chapter 15); IRC R314.1.2, Chapter 43 (New)

Proponent: Bob Eugene, Underwriters Laboratories Inc.

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY, GENERAL AND STRUCTURAL AND THE IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise as follows:

703.2 Fire-resistance ratings. The fire-resistance rating of building elements shall be determined in accordance with the test procedures set forth in ASTM E 119 or UL 263, or in accordance with Section 703.3. Where materials, systems or devices that have not been tested as part of a fire-resistance-rated assembly are incorporated into the assembly, sufficient data shall be made available to the building official to show that the required fire-resistance rating is not reduced. Materials and methods of construction used to protect joints and penetrations in fire-resistance-rated building elements shall not reduce the required fire-resistance rating.

Exception: In determining the fire-resistance rating of exterior bearing walls, compliance with the ASTM E 119 or UL 263 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases is required only for a period of time corresponding to the required fire-resistance rating of an exterior nonbearing wall with the same fire separation distance, and in a building of the same group. When the fire-resistance rating determined in accordance with this exception exceeds the fire-resistance rating determined in accordance with ASTM E 119 or UL 263, the fire exposure time period, water pressure, and application duration criteria for the hose stream test of ASTM E 119 or UL 263 shall be based upon the fire-resistance rating determined in accordance with this exception.

703.2.1 Nonsymmetrical wall construction. Interior walls and partitions of nonsymmetrical construction shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests conducted in compliance with ASTM E 119 or UL 263. When evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the building official, the wall need not be subjected to tests from the opposite side (see Section 704.5 for exterior walls).

703.2.3 Restrained classification. Fire-resistance-rated assemblies tested under ASTM E 119 shall not be considered to be restrained unless evidence satisfactory to the building official is furnished by the registered design professional showing that the construction qualifies for a restrained classification in accordance with ASTM E 119 or UL 263. Restrained construction shall be identified on the plans.

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

1. Fire-resistance designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements as prescribed in Section 720.
3. Calculations in accordance with Section 721.
4. Engineering analysis based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E 119 or UL 263.
5. Alternative protection methods as allowed by Section 104.11.

704.7 Unexposed surface temperature. Where protected openings are not limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 or UL 263 shall not apply. Where protected openings are limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 or UL 263 shall not apply provided that a correction is made for radiation from the unexposed exterior wall surface in accordance with the following formula:

$$A_e = A + (A_f \times F_{eo}) \quad \text{(Equation 7-1)}$$

where:

A_e = Equivalent area of protected openings.

A = Actual area of protected openings.

A_f = Area of exterior wall surface in the story under consideration exclusive of openings, on which the temperature limitations of ASTM E 119 or UL 263 for walls are exceeded.

F_{eo} = An "equivalent opening factor" derived from Figure 704.7 based on the average temperature of the unexposed wall surface and the fire-resistance rating of the wall.

704.9 Vertical separation of openings. Openings in exterior walls in adjacent stories shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower story is not a protected opening with a fire protection rating of not less than 3/4 hour. Such openings shall be separated vertically at least 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of at least 1 hour or by flame barriers that extend horizontally at least 30 inches (762 mm) beyond the exterior wall. Flame barriers shall also have a fire-resistance rating of at least 1 hour. The unexposed surface temperature limitations specified in ASTM E 119 or UL 263 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code.

Exceptions:

1. This section shall not apply to buildings that are three stories or less in height.
2. This section shall not apply to buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Open parking garages.

706.2.1 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 or UL 263 and complying with the requirements of Section 706, shall be permitted. Fire-resistance-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and the identifier "W-XXX," where the "XXX" is the fire-resistance rating in minutes. Such label or identification shall be issued by an approved agency and shall be permanently affixed to the glazing.

706.7 Openings. Openings in a fire barrier wall 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 (15m²). 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 fire areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Fire doors 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 windows permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of length of the wall.

711.3.2 Access doors. Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and roof/ceiling 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.

712.3.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 712.3.1.1 or 712.3.1.2.

Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space between the penetrating item and the fire-resistance-rated wall is permitted to be protected as follows:

1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (0.0929 m²), concrete, grout or mortar is permitted where it is installed the full thickness of the wall or the thickness required to maintain the fire-resistance rating; or
2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

712.4.1.1 Through penetrations. Through penetrations of fire-resistance-rated horizontal assemblies shall comply with Section 712.4.1.1.1 or 712.4.1.1.2.

Exceptions:

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistance- rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 mm²) in any 100 square feet (9.3 m²) of floor area.
2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items shall not be limited to the penetration of a single concrete floor, provided the area of the opening through each floor does not exceed 144 square inches (92 900 mm²).
3. Penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.

713.1 General. Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 713.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

Exception: Fire-resistant joint systems shall not be required for joints in all of the following locations:

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 707.

3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors within open parking structures.
6. Mezzanine floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119 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.

714.7 Seismic isolation systems. Fire-resistance ratings for the isolation system shall meet the fire-resistance rating required for the columns, walls or other structural elements in which the isolation system is installed in accordance with Table 601. Isolation systems required to have a fire-resistance rating shall be protected with approved materials or construction assemblies designed to provide the same degree of fire resistance as the structural element in which it is installed when tested in accordance with ASTM E 119 or UL 263 (see Section 703.2).

Such isolation system protection applied to isolator units shall be capable of retarding the transfer of heat to the isolator unit in such a manner that the required gravity load-carrying capacity of the isolator unit will not be impaired after exposure to the standard time-temperature curve fire test prescribed in ASTM E 119 or UL 263 for a duration not less than that required for the fire-resistance rating of the structure element in which it is installed.

Such isolation system protection applied to isolator units shall be suitably designed and securely installed so as not to dislodge, loosen, sustain damage or otherwise impair its ability to accommodate the seismic movements for which the isolator unit is designed and to maintain its integrity for the purpose of providing the required fire-resistance protection.

715.2 Fire-resistance-rated glazing. Labeled fire-resistance-rated glazing tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119 or UL 263 shall not be required to comply with this section.

716.5.2 (IMC 607.5.2) Fire barriers. Ducts and air transfer openings of fire barriers shall be protected with approved fire dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate exit enclosures and exit passageways except as permitted by Sections 1020.1.2 and 1021.5, respectively.

Exception: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance rated assembly.
2. Ducts are used as part of an approved smoke control system in accordance with Section 909 and where the use of a fire damper would interfere with the operation of a smoke control system.
3. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group Hand are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

716.5.3 (IMC 607.5.5) Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with approved fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:
 - 1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside; or
 - 1.2. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the rated assembly; or
 - 1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 and where the fire damper will interfere with the operation of the smoke control system; or

- 1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In Group B and R occupancies, equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where:
 - 2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a wall thickness of at least 0.019 inch (0.48 mm); and
 - 2.2. That extend at least 22 inches (559 mm) vertically; and
 - 2.3. An exhaust fan is installed at the upper terminus of the shaft that is, powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside.
3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
4. Smoke dampers are not required at penetrations of shafts where ducts are used as part of an approved mechanical smoke control system designed in accordance with Section 909 and where the smoke damper will interfere with the operation of the smoke control system.

716.6.1 (IMC 607.6.1) Through penetrations. In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection, provided 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.

716.6.2.1 (IMC 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 E 119 or UL 263 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.

**TABLE 720.1(1)
MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON TIME PERIODS
FOR VARIOUS NONCOMBUSTIBLE INSULATING MATERIALS^m**

(Portions of table not shown do not change)

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

- a. Reentrant parts of protected members to be filled solidly.
- b. Two layers of equal thickness with a 3/4-inch airspace between.
- c. For all of the construction with gypsum wallboard described in Table 720.1(1), gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided attachment is identical to that specified for the wallboard and the joints on the face layer are reinforced, and the entire surface is covered with a minimum of 1/16-inch gypsum veneer plaster.
- d. An approved adhesive qualified under ASTM E 119 or UL 263.
- e. Where lightweight or sand-lightweight concrete having an oven-dry weight of 110 pounds per cubic foot or less is used, the tabulated minimum cover shall be permitted to be reduced 25 percent, except that in no case shall the cover be less than 3/4 inch in slabs or 1 1/2 inches in beams or girders.
- f. For solid slabs of siliceous aggregate concrete, increase tendon cover 20 percent.
- g. Adequate provisions against spalling shall be provided by U-shaped or hooped stirrups spaced not to exceed the depth of the member with a clear cover of 1 inch.
- h. Prestressed slabs shall have a thickness not less than that required in Table 720.1(3) for the respective fire resistance time period.

- i. Fire coverage and end anchorages shall be as follows: Cover to the prestressing steel at the anchor shall be 1/2 inch greater than that required away from the anchor. Minimum cover to steel-bearing plate shall be 1 inch in beams and 3/4 inch in slabs.
- j. For beam widths between 8 inches and 12 inches, cover thickness shall be permitted to be determined by interpolation.
- k. Interior spans of continuous slabs, beams and girders shall be permitted to be considered restrained.
- l. For use with concrete slabs having a comparable fire endurance where members are framed into the structure in such a manner as to provide equivalent performance to that of monolithic concrete construction.
- m. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in GA 600 shall be accepted as if herein listed.
- n. No additional insulating material is required on the exposed outside face of the column flange to achieve a 1-hour fire-resistance rating.

1407.10.2 Thermal barriers. MCM shall be separated from the interior of a building by an approved thermal barrier consisting 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 (121°C) after 15 minutes of fire exposure in accordance with the standard time-temperature curve of ASTM E 119 or UL 263. The thermal barrier shall be installed in such a manner that it will remain in place for not less than 15 minutes based on a test conducted in accordance with UL 1715.

2603.4 Thermal barrier. Except as provided for in Sections 2603.4.1 and 2603.9, foam plastic 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. 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. Combustible concealed spaces shall comply with Section 717.

2603.5.1 Fire-resistance-rated walls. Where the wall is required to have a fire-resistance rating, data based on tests conducted in accordance with ASTM E 119 or UL 263 shall be provided to substantiate that the fire-resistance rating is maintained.

PART II – IBC GENERAL

Revise as follows:

410.3.5.2 Fire test. A sample curtain with a minimum of two vertical seams shall be subjected to the standard fire test specified in ASTM E 119 or UL 263 for a period of 30 minutes. The curtain shall overlap the furnace edges by an amount that is appropriate to seal the top and sides. The curtain shall have a bottom pocket containing a minimum of 4 pounds per linear foot (5.9 kg/m) of batten. The exposed surface of the curtain shall not glow, and flame or smoke shall not penetrate the curtain during the test period. Unexposed surface temperature and hose stream test requirements are not applicable to the proscenium fire safety curtain test.

PART III – IBC STRUCTURAL

1. Revise as follows:

2103.2 Clay or shale masonry units. Clay or shale masonry units shall conform to the following standards: ASTM C 34 for structural clay load-bearing wall tile; ASTM C56 for structural clay nonload-bearing wall tile; ASTM C 62 for building brick (solid masonry units made from clay or shale); ASTM C 1088 for solid units of thin veneer brick; ASTM C 126 for ceramic-glazed structural clay facing tile, facing brick and solid masonry units; ASTM C 212 for structural clay facing tile; ASTM C 216 for facing brick (solid masonry units made from clay or shale); ASTM C 652 for hollow brick (hollow masonry units made from clay or shale); and ASTM C 1405 for glazed brick (single-fired solid brick units).

Exception: Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E 119 or UL 263 and shall comply with the requirements of Table 602.

2. Add standard to Chapter 35 as follows:

UL
UL 263-03 Standard for Fire Test of Building Construction and Materials

PART IV – IRC BUILDING/ENERGY

Revise as follows:

R314.4 Thermal barrier. Unless otherwise allowed in Section R314.5 or Section R314.6, foam plastic shall be separated from the interior of a building by an approved thermal barrier of minimum 0.5 inch (12.7 mm) gypsum wallboard or an approved finish material equivalent to a thermal barrier material that will limit the average temperature rise of the unexposed surface to no more than 250°F (139°C) after 15 minutes of fire exposure complying with the

ASTM E 119 or UL 263 standard time temperature curve. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on NFPA 286 with the acceptance criteria of Section R315.4, FM 4880, UL 1040 or UL 1715.

R317.1 Two-family dwellings. Dwelling units in two-family dwellings shall be separated from each other by wall and/or floor assemblies having not less than a 1-hour fire-resistance rating when tested in accordance with ASTM E 119 or UL 263. Fire-resistance-rated floor-ceiling and wall assemblies shall extend to and be tight against the exterior wall, and wall assemblies shall extend to the underside of the roof sheathing.

Exceptions:

1. A fire-resistance rating of ½ hour shall be permitted in buildings equipped throughout with an automatic sprinkler system installed in accordance with NFPA 13.
2. Wall assemblies need not extend through attic spaces when the ceiling is protected by not less than 5/8-inch (15.9 mm) Type X gypsum board and an attic draft stop constructed as specified in Section R502.12.1 is provided above and along the wall assembly separating the dwellings. The structural framing supporting the ceiling shall also be protected by not less than ½-inch (12.7 mm) gypsum board or equivalent.

R317.3.1 Through penetrations. Through penetrations of fire-resistance-rated wall or floor assemblies shall comply with Section R317.3.1.1 or R317.3.1.2.

Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space shall be protected as follows:

1. In concrete or masonry wall or floor assemblies where the penetrating item is a maximum 6 inches (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (92 900 mm²), concrete, grout or mortar is permitted where installed to the full thickness of the wall or floor assembly or the thickness required to maintain the fire-resistance rating.
2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time temperature fire conditions under a minimum positive pressure differential of 0.01 inch of water (3 Pa) at the location of the penetration for the time period equivalent to the fire resistance rating of the construction penetrated.

Reason: Add a direct reference to UL 263 where ASTM E119 is currently referenced.

The purpose of this code change is to include reference to UL 263 as an alternate to ASTM E 119, which is currently referenced in these code sections. These two Standards describe the same test method. The specifications for the test apparatus and test procedure are identical between the two standards. As such, identical test results would be obtained from tests conducted using each of these methods. UL 263 is an ANSI approved standard.

The inclusion of this alternate test method would provide the authority having jurisdiction with the flexibility to accept listed and labeled products evaluated in accordance with ASTM E 119 or UL 263.

These fire tests are applicable to assemblies of masonry units and to composite assemblies of structural materials for buildings, including bearing and other walls and partitions, columns, girders, beams, slabs, and composite slab and beam assemblies for floors and roofs. They are also applicable to other assemblies and structural units that constitute permanent integral parts of a finished building.

Bibliography: UL 263

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

Analysis: Results of the review of the proposed standard(s) will be posted on the ICC website by August 20, 2006.

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC GENERAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART III – IBC STRUCTURAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART IV – IRC BUILDING/ENERGY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS11-06/07

402.10, 402.15.4, 406.5.2, 406.6.6.3 and 410.3.5.3, 703.4.2, 719.1, 719.4, 802.1, 803.1, 803.5, 803.6.1, 803.6.2, 1407.10.1, 2603.3, 2603.5.4, 2606.4, Chapter 35 (New) D102.2.8, D106; IFC 804.2.4, 803.5.1, [F] 806.5, [F] 2606.2.4, Chapter 45; IRC R314.3, R314.6, R315.3, R315.4, R316.1, R316.2, M1601.2.1, Chapter 43; IWUIC 202, Chapter 7

Proponent: Bob Eugene, Underwriters Laboratories Inc.

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY, GENERAL AND STRUCTURAL, IFC, IRC BUILDING/ENERGY, MECHANICAL AND WUIC CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Revise as follows:

703.4.2 Composite materials. Materials having a structural base of noncombustible material as determined in accordance with Section 703.4.1 with a surfacing not more than 0.125 inch (3.18 mm) thick that has a flame spread index not greater than 50 when tested in accordance with ASTM E 84 or UL 723 shall be acceptable as noncombustible materials.

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*.

719.4 Loose-fill insulation. Loose-fill insulation materials that cannot be mounted in the ASTM E 84 or UL 723 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Sections 719.2 and 719.3 when tested in accordance with CAN/ULC S102.2.

Exception: Cellulose loose-fill insulation shall not be required to comply with the flame spread index requirement of CAN/ULC S102.2, provided such insulation complies with the requirements of Section 719.6.

802.1 FLAME SPREAD INDEX. A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E 84 or UL 723.

803.1 General. Interior wall and ceiling finishes shall be classified in accordance with ASTM E 84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

- Class A: Flame spread 0-25; smoke-developed 0-450.
- Class B: Flame spread 26-75; smoke-developed 0-450.
- Class C: Flame spread 76-200; smoke-developed 0-450.

Exception: Materials, other than textiles, tested in accordance with Section 803.2.

803.5 Interior finish requirements based on group. Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.5 for the group and location designated. Interior wall and ceiling finish materials, other than textiles, tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.2.1, shall be permitted to be used where a Class A classification in accordance with ASTM E 84 or UL 723 is required.

803.6.1 Surface burning characteristic test. Textile 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.

1407.9 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.

1407.10.1 Surface-burning characteristics. MCM shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723.

2603.3 Surface-burning characteristics. Unless otherwise indicated in this section, foam plastic insulation and foam plastic cores of manufactured assemblies shall have a flame spread index of not more than 75 and a smoke-developed index of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723. Loose fill-type foam plastic insulation shall be tested as board stock for the flame spread index and smoke-developed index.

Exceptions:

1. Smoke-developed index for interior trim as provided for in Section 2604.2.
2. In cold storage buildings, ice plants, food plants, food processing rooms and similar areas, foam plastic insulation where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1. The approved automatic sprinkler system shall be provided in both the room and that part of the building in which the room is located.
3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256. The smoke-developed index shall not be limited for roof applications.
4. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided the end use is approved in accordance with Section 2603.9 using the thickness and density intended for use.
5. Flame spread and smoke-developed indexes for foam plastic interior signs in covered mall buildings provided the signs comply with Section 402.15.

2603.4.1.13 Type V construction. Foam plastic spray applied to a sill plate and header of Type V construction is subject to all of the following:

1. The maximum thickness of the foam plastic shall be 3¼ inches (82.6 mm).
2. The density of the foam plastic shall be in the range of 1.5 to 2.0 pcf (24 to 32 kg/m³).
3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723.

2603.5.4 Flame spread and smoke-developed indexes. Foam plastic insulation, exterior coatings and facings shall be tested separately in the thickness intended for use, but not to exceed 4 inches (102 mm), and shall each have a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723.

Exception: Prefabricated or factory-manufactured panels having minimum 0.020-inch (0.51 mm) aluminum facings and a total thickness of 0.25 inch (6.4 mm) or less are permitted to be tested as an assembly where the foam plastic core is not exposed in the course of construction.

2606.4 Specifications. Light-transmitting plastics, including thermoplastic, thermosetting or reinforced thermosetting plastic material, shall have a self-ignition temperature of 650°F (343°C) or greater where tested in accordance with ASTM D 1929; a smoke-developed index not greater than 450 where tested in the manner intended for use in accordance with ASTM E 84 or UL 723, or not greater than 75 where tested in the thickness intended for use in accordance with ASTM D 2843 and shall conform to one of the following combustibility classifications:

Class CC1: Plastic materials that have a burning extent of 1 inch (25 mm) or less where tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use, in accordance with ASTM D 635,

Class CC2: Plastic materials that have a burning rate of 2.5 inches per minute (1.06 mm/s) or less where tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use, in accordance with ASTM D 635.

D102.2.8 Permanent canopies. Permanent canopies are permitted to extend over adjacent open spaces provided:

1. The canopy and its supports shall be of noncombustible material, fire-retardant-treated wood, Type IV construction or of 1-hour fire-resistance-rated construction.

Exception: Any textile covering for the canopy shall meet the fire propagation performance criteria of NFPA 701 after both accelerated water leaching and accelerating weathering.

2. Any canopy covering, other than textiles, shall have a flame spread index not greater than 25 when tested in accordance with ASTM E 84 or UL 723 in the form intended for use.
3. The canopy shall have at least one long side open.
4. The maximum horizontal width of the canopy shall not exceed 15 feet (4572 mm).
5. The fire resistance of exterior walls shall not be reduced.

2. Add new standard to Chapter 35 and Appendix D as follows:

UL
723-03 Standard for Test for Surface Burning Characteristics of Building Materials, with Revisions through May 2005

**SECTION D106
REFERENCED STANDARDS**

ASTM
E 84-04 Test Method for Surface Burning Characteristics of Building Materials

PART II – IBC GENERAL

1. Revise as follows:

402.10 Kiosks. Kiosks and similar structures (temporary or permanent) shall meet the following requirements:

1. Combustible kiosks or other structures shall not be located within the mall unless constructed of any of the following materials:
 - 1.1. Fire-retardant-treated wood complying with Section 2303.2.
 - 1.2. Foam plastics having a maximum heat release rate not greater than 100kW (105 Btu/h) when tested in accordance with the exhibit booth protocol in UL 1975.
 - 1.3. Aluminum composite material (ACM) having a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E 84 or UL 723.
2. Kiosks or similar structures located within the mall shall be provided with approved fire suppression and detection devices.
3. The minimum horizontal separation between kiosks or groupings thereof and other structures within the mall shall be 20 feet (6096 mm).
4. Each kiosk or similar structure or groupings thereof shall have a maximum area of 300 square feet (28 m²).

402.15.4 Plastics other than foam plastics. Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with Section 2606.4 or shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929, and a flame spread index not greater than 75 and smoke-developed index not greater than 450 when tested in the manner intended for use in accordance with ASTM E 84 or UL 723 or meet the acceptance criteria of Section 803.2.1 when tested in accordance with NFPA 286.

406.5.2 Canopies. Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 13 feet 6 inches (4115 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials, fire-retardant-treated wood complying with Chapter 23, wood of Type IV sizes or of construction providing 1-hour fire resistance. Combustible materials used in or on a canopy shall comply with one of the following:

1. Shielded from the pumps by a noncombustible element of the canopy, or wood of Type IV sizes;
2. Plastics covered by aluminum facing having a minimum thickness of 0.010 inch (0.30 mm) or corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm). The plastic shall have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in the form intended for use in accordance with ASTM E 84 or UL 723 and a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929; or
3. Panels constructed of light-transmitting plastic materials shall be permitted to be installed in canopies erected over motor vehicle fuel-dispensing station fuel dispensers, provided the panels are located at least 10 feet (3048 mm) from any building on the same lot and face yards or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall not exceed 1,000 square feet (93 m²). The maximum area of any individual panel shall not exceed 100 square feet (9.3 m²).

410.3.5.3 Smoke test. Curtain fabrics shall have a smoke-developed rating of 25 or less when tested in accordance with ASTM E 84 or UL 723.

3105.4 Canopy materials. Canopies shall be constructed of a rigid framework with an approved covering that meets the fire propagation performance criteria of NFPA 701 or has a flame spread index not greater than 25 when tested in accordance with ASTM E 84 or UL 723.

2. Add new standard to Chapter 35 as follows:

UL
723-03 Standard for Test for Surface Burning Characteristics of Building Materials, with Revisions through May 2005

PART III – IBC STRUCTURAL

Revise as follows:

2303.2 Fire-retardant-treated wood. Fire-retardant-treated wood is any wood product which, when impregnated with chemicals by a pressure process or other means during manufacture, shall have, when tested in accordance with ASTM E 84 or UL 723, a listed flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10.5 feet (3200 mm) beyond the centerline of the burners at any time during the test.

PART IV – IFC

1. Revise as follows:

803.5.1 Textile wall coverings. Textile wall coverings shall comply with one of the following:

1. The 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,
2. The covering shall meet the criteria of Section 803.5.1.1 or 803.5.1.2 when tested in the manner intended for use in accordance with NFPA 265 using the product-mounting system, including adhesive, of actual use, or
3. The covering shall meet the criteria of Section 803.1.2.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, of actual use.

804.2.4 Flame spread. The flame spread rating shall not exceed 75 where tested in accordance with ASTM E 84 or UL 723. The smoke-developed index shall not be limited.

[F] 806.5 Interior trim. Material, other than foam plastic used as interior trim shall have a minimum Class C flame spread and smoke-developed index when tested in accordance with ASTM E 84 or UL 723, as described in Section 803.1. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the aggregate wall or ceiling area in which it is located.

[F] 2604.2.4 Flame spread. The flame spread index shall not exceed 75 where tested in accordance with ASTM E 84 or UL 723. The smoke-developed index shall not be limited.

2. Add new standard to Chapter 45 as follows:

UL 723-03 Standard for Test for Surface Burning Characteristics of Building Materials, with Revisions through May 2005

PART V – IRC BUILDING/ENERGY

1. Revise as follows:

R314.3 Surface burning characteristics. Unless otherwise allowed in Section R314.5 or R314.6, all foam plastic or foam plastic cores used as a component in manufactured assemblies used in building construction shall have a flame spread index of not more than 75 and shall have a smoke-developed index of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723. Loose-fill type foam plastic insulation shall be tested as board stock for the flame spread index and smoke-developed index.

Exception: Foam plastic insulation more than 4 inches thick shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches, provided the end use is approved in accordance with Section R314.6 using the thickness and density intended for use.

R314.6 Specific approval. Foam plastic not meeting the requirements of Sections R314.3 through R314.5 shall be specifically approved on the basis of one of the following approved tests: NFPA 286 with the acceptance criteria of Section R315.4, FM4880, UL 723, UL1040 or UL1715, or fire tests related to actual end-use configurations. The specific approval shall be based on the actual end use configuration and shall be performed on the finished foam

plastic assembly in the maximum thickness intended for use. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

R315.3 Testing. Tests shall be made in accordance with ASTM E 84 or UL 723.

R315.4 Alternate test method. As an alternate to having a flame-spread classification of not greater than 200 and a smoke developed index of not greater than 450 when tested in accordance with ASTM E 84 or UL 723, wall and ceiling finishes, other than textiles, shall be permitted to be tested in accordance with NFPA 286. Materials tested in accordance with NFPA 286 shall meet the following criteria:

During the 40 kW exposure, the interior finish shall comply with Item 1. During the 160 kW exposure, the interior finish shall comply with Item 2. During the entire test, the interior finish shall comply with Item 3.

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. During the 160 kW exposure, the interior finish shall comply with the following:
 - 2.1. Flame shall not spread to the outer extremity of the sample on any wall or ceiling.
 - 2.2. Flashover, as defined in NFPA 286, shall not occur.
3. The total smoke released throughout the NFPA 286 test shall not exceed 1,000 m².

R316.1 Insulation. Insulation materials, including facings, such as vapor retarders or vapor permeable membranes installed within floor-ceiling assemblies, roof-ceiling assemblies, wall assemblies, crawl spaces and attics shall have a flame-spread index not to exceed 25 with an accompanying smoke-developed index not to exceed 450 when tested in accordance with ASTM E 84 or UL 723.

Exceptions:

1. When such materials are installed in concealed spaces, the flame-spread and smoke-developed limitations do not apply to the facings, provided that the facing is installed in substantial contact with the unexposed surface of the ceiling, floor or wall finish.
2. Cellulose loose-fill insulation, which is not spray applied, complying with the requirements of Section R316.3, shall only be required to meet the smoke-developed index of not more than 450.

R316.2 Loose-fill insulation. Loose-fill insulation materials that cannot be mounted in the ASTM E 84 or UL 723 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Sections R316.1 and R316.4 when tested in accordance with CAN/ULC S102.2.

Exception: Cellulose loose-fill insulation shall not be required to comply with the flame spread index requirement of CAN/ULC S102.2, provided such insulation complies with the requirements of Section R316.3.

2. Add standard to Chapter 43 as follows:

UL
723-03 Standard for Test for Surface Burning Characteristics of Building Materials, with Revisions through May 2005

PART VI – IRC MECHANICAL

Revise as follows:

M1601.2.1 Duct insulation materials. Duct insulation materials shall conform to the following requirements:

1. Duct coverings and linings, including adhesives where used, shall have a flame spread index not higher than 25, and a smoke-developed index not over 50 when tested in accordance with ASTM E 84 or UL 723, using the specimen preparation and mounting procedures of ASTM E 2231.
2. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C).
3. External duct insulation and factory-insulated flexible ducts shall be legibly printed or identified at intervals not longer than 36 inches (914 mm) with the name of the manufacturer; the thermal resistance *R*-value at the specified installed thickness; and the flame spread and smoke-developed indexes of the composite materials. All duct insulation product *R*-values shall be based on insulation only, excluding air films, vapor retarders or other duct components, and shall be based on tested *C*-values at 75°F (24°C) mean temperature at the installed thickness, in accordance with recognized industry procedures. The installed thickness of duct insulation used to determine its *R*-value shall be determined as follows:
 - 3.1. For duct board, duct liner and factory-made rigid ducts not normally subjected to compression, the nominal insulation thickness shall be used.
 - 3.2. For ductwrap, the installed thickness shall be assumed to be 75 percent (25-percent compression) of nominal thickness.

- 3.3. For factory-made flexible air ducts, The installed thickness shall be determined by dividing the difference between the actual outside diameter and nominal inside diameter by two.

PART VII - WUIC

1. Revise as follows:

SECTION 202 DEFINITIONS

NONCOMBUSTIBLE. As applied to building construction material means a material that, in the form in which it is used, is either one of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E 136 shall be considered noncombustible within the meaning of this section.
2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over 1/8 inch (3.2 mm) thick, which has a flame spread rating of 50 or less. Flame spread rating as used herein refers to rating obtained according to tests conducted as specified in ASTM E 84 or UL 723.

“Noncombustible” does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classed as noncombustible that is subject to increase in combustibility or flame spread rating, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

2. Add referenced standard to Chapter 7 as follows:

UL
723-03 Standard for Test for Surface Burning Characteristics of Building Materials, with Revisions through May 2005

Reason: (IBC, IFC, IMC, IRC and IWUIC) Add a direct reference to UL 723 where ASTM E84 is referenced throughout the family of I-codes.

The purpose of this code change is to include reference to UL 723 as an alternate to ASTM E 84 throughout the family of I-codes. These two Standards describe the same test method. The specifications for the test apparatus and test procedure are identical between the two standards. As such, identical test results would be obtained from tests conducted using each of these methods. UL 723 is an ANSI approved standard.

The inclusion of this alternate test method would provide the authority having jurisdiction with the flexibility to accept listed and labeled products evaluated in accordance with ASTM E 84 or UL 723.

The purpose of the test is to determine the comparative burning characteristics of the material under test by evaluating the spread of flame over its surface and the density of the smoke developed when exposed to a test fire, and thus to establish a basis on which surface burning characteristics of different materials are compared.

Bibliography: UL 723

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

Analysis: Results of the review of the proposed standard will be posted on the ICC website by August 20, 2006.

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC GENERAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART III – IBC STRUCTURAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART IV – IFC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART V – IRC BUILDING/ENERGY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART VI – IRC MECHANICAL

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART VII – WUIC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS12-06/07

703.3

Proponent: Susan Lamont, PhD, Arup Fire

Revise as follows:

703.3 Alternative methods for determining fire resistance. The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E 119 or a credible worst case design based fire exposure and acceptance criteria as agreed with the building official. The required fire resistance of a building element shall be permitted to be established by any of the following methods or procedures:

1. Fire-resistance designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements as prescribed in Section 720.
3. Calculations in accordance with Section 721.
4. Engineering analysis based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E 119.
5. Alternative protection methods as allowed by Section 104.11.
6. Global structural analysis of a whole frame or assembly including: exposure to a series of credible worst case design fires, the relevant heat transfer calculations to the structural members, the relevant loads, the relevant failure modes during fire exposure, the temperature-dependent material properties and member stiffness as well as the effects of thermal expansion. The impact of deformations on compartmentation shall also be taken into account.

Reason: The purpose of the code change is to include new text such that performance based design of structural steel frames can be proposed on projects. This means that the IBC would allow performance based design for fire resistance similarly to other international codes for example in the UK, Europe and Australia. Also, to recognize that the performance of structural members in a real fire can be very different to the fire resistance of single members i.e. a beam, column or slab acting in isolation of the rest of the frame in a standard furnace.

This is important because savings in structural fire protection can be made when structures are robustly designed but also weaknesses in the structural frame which can exist when thermal expansion forces act on a structure during a fire can be identified and designed against. This is particularly important in innovative structural design and iconic buildings which are generally much taller or have longer spans and cannot be adequately tested in standard furnace tests. The methodology however is applicable to any structure.

The recommendations in the IBC for fire resistance are based on single element tests in a standard furnace. Although this approach is an essential requirement of the regulatory system and enables engineers, manufacturers and building officials to compare the relative performance of different structural components and materials for a range of fire resistance periods it does not represent the real response of structures in real fires. The fire is not necessarily representative of many credible worst case fires and the forces induced in single elements in a furnace can be very different to those induced as a result of restrained thermal expansion and alternative load paths in a highly redundant frame.

As the understanding of the science of fire develops, and its resulting effect on materials and structure, more advanced validated tools are becoming available for engineers for use in the design process.

It is becoming increasingly clear through research and performance based design projects that designing structures with the single aim of protecting structural materials to meet the code requirements for hourly fire resistance, may result in intrinsic weaknesses within the structural stability system. Alternatively it can mean ignoring intrinsic strengths. Passive fire protection simply delays the heating of steel members it does not eliminate it thus protected steel members still get hot and expand. This expansion allows floors to reach high deflections which can be beneficial because alternative load paths exist such as catenary action in beams or tensile membrane action in slabs. However expansion also generates forces and moments which the primary structure, particularly the columns have to resist and were never designed or tested to resist.

The sole aim of structural fire engineering proposed in the code change is to quantify the response of the proposed “cold temperature” structural design, in realistic fire scenarios, in order to determine if this response is acceptable. Strengths and weaknesses can then be clearly identified and addressed within the design, as appropriate.

In the investigation of the WTC collapse NIST set out a series of recommendations to be considered in code development. One of these (recommendation 9) specifically addresses the need to calculate structural fire response in design of tall or innovative buildings.

Research into the fire response of structures has been developing for many years ever since the first standard furnace test over 100 years ago. The understanding of the whole frame response to fire has however increased rapidly in the last 15 years with the Broadgate Fire (a multi-storey composite steel frame caught fire at night during construction when most of the steel frame was unprotected and remained standing after a severe post-flashover fire) in the UK, the detailed analysis of the Cardington 8-storey composite steel frame fire tests in the UK and Europe, similar tests and research in New Zealand and Australia, and onwards to the analysis of the WTC collapse on 9-11 by NIST and others, and currently the recent Torre Windsor fire in Madrid, Spain.

The Cardington Frame tests enabled engineers to measure temperatures and deflections in a whole series of compartment fire tests where the steel beams were left unprotected on a real composite steel frame and temperatures in the compartment exceeded 1000C for up to an hour. The tests and subsequent modeling of the tests showed that alternative load carrying mechanisms develop in fire when the composite slab and beams deflect as a result of thermal expansion and thermal bowing. These mechanisms allow the gravity and live loads to be supported in catenary action in the beams and tensile membrane action in the slab. For the 9m span beams which formed the Cardington Frame failure of the structure was not observed even in the largest post-flashover compartment fires.

Recent research is now considering longer spans (up to 21m) and different steel members such as trusses or deep beams with many penetrations in the web which typically heat more quickly than hot-rolled beam sections. As at Cardington there are alternative load paths but the much larger deflections as a consequence of the longer spans, need to be addressed and sometimes simply protecting the member in accordance with prescriptive rules is not necessarily the best solution.

Arup Fire already use finite element analysis techniques validated for fire by the Cardington Large Building Test Frame program, and more recently used to quantify the WTC collapse sequence, in design.

The references and standards listed in the Bibliography below outlines the background and the basis of the performance based design methodology proposed, the reasons why it is important for design and appropriate validation for software.

The contents of the references can be summarized as follows;

A four step approach is required for a global structural fire analysis as follows:

- a. determine reasonable design basis fire scenarios
- b. quantify the heat transfer from these fires to representative structural elements
- c. quantify the mechanical response of the elements for the entire duration of the fire
- d. determine appropriate passive fire protection and/or structural detailing based on this response

The fire size is the main input to a structural fire analysis. The Design Fires proposed should address (a) the quantity of fuel available (b) the quantity of ventilation through the glazed façade, c) compartment dimensions and d) properties of the wall linings.

Heat transfer analyses provide the temperature variation with time along the length and through each section of all structural materials during the fire exposure. It is from this data using a fully validated non-linear finite element analysis package that the mechanical response of the structure to the fire can be quantified.

The software used for heat transfer and structural analysis needs to be validated against full scale test data for example the Cardington frame fire tests.

The design approach is important to calculate the structural response of buildings to fire because current prescriptive rules ignore the forces generated in building elements by thermal expansion therefore design teams can either over design members or ignore inherent weaknesses. Many of the innovative structures developed by design teams with long spans for example cannot be adequately tested in a standard furnace.

This approach is described in British Standards, Eurocodes and design guides in Australia, New Zealand and around the world. It is most widely used in the UK and Europe because the fundamental research was conducted there but the methodology can be applied to performance based design in any country.

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Cost Impact: The code change proposal will not increase the cost of construction unless the structural design is such that it is particularly susceptible to fire in which case changes to the design may be necessary. In most cases these changes can be offset by savings in passive fire protection to secondary members which have been shown by the performance based analysis to be redundant.

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS13–06/07

703.5 (New)

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

Add new text as follows:

703.5 Marking and identification Firewalls, Fire Barriers, Fire Partitions, or Smoke Barriers, or any other wall required to have a fire–resistance rating or restrict the passage of smoke shall be identified with signs or stenciling in a manner acceptable to the Building Official. Such identification shall be accessible and shall include the wording:

FIRE AND SMOKE BARRIER: PROTECT ALL OPENINGS.

Reason: The purpose of the code change is to introduce a requirement for Marking and Identification of required fire walls.

This proposal is intended to aid building officials, building managers, maintenance workers and contractors working in buildings in identifying and maintaining building elements installed specifically to prevent the movement of fire and/or smoke

Establishing the requirement for identification of building elements installed specifically to prevent the movement of fire and/or smoke during the construction phase of a building is beneficial to the building official's responsible for issuing C of O and for building managers, maintenance workers and contractors working in buildings during future building renovations or routine inspections. When buildings are engineered with fire rated walls and floors designed to contain smoke and/or fire, openings created in these assemblies by ducts, dampers, doors, windows, cable, conduit, pipe, ductwork, and installed equipment can compromise safety and jeopardize business continuity if not protected effectively. The addition of new through-penetrations over the life of a building is essentially inevitable, whether for wiring, plumbing or ventilation modifications. The tradesmen doing that work will not often be given the master plans of the building, and not know that their work needs to be firestopped. The same holds true for other elements in a fire-resistive assembly such as dampers for ducts, fire doors, and fire-rated glazing, which can easily be overlooked over the life of the building.

Building modifications, installed equipment, inspections, change orders and construction projects can all generate a need to identify whether a particular assembly is required to act as a barrier to smoke or fire. The addition of the proposed marking during the construction phase of a building is of great benefit to fire officials who conduct inspections over the course of the buildings life cycle and occupancy, and will facilitate ease of inspection during building renovation. Such identification marking also serves to alert trades people working within the building that, as penetrations are being made, the openings require additional consideration or protection. This will often be the only indication to workers that firestopping is required. This is particularly critical in the case of firewalls because they are used to subdivide structures into separate buildings.

The 1999 Standard Building Code contained requirements for the marking and identification of horizontal and vertical barriers required to either to have a fire-resistance rating or be effective barriers to the movement of smoke within a building. OSHA also has requirements for marking and labeling of safety features in buildings. Very similar language has also been a requirement of the Florida Building Code until the 2004 FBC. In those jurisdictions, the industry is already familiar with this requirement. Jurisdictions that have had this requirement in the past, have not reported widespread difficulties in trying to understand or enforce its application. To the contrary, in past cycles, we have heard testimony from those jurisdictions in support of this principal

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS14-06/07

703.5 (New), IFC 703.5 (New)

Proponent: Sean DeCrane, Cleveland Fire Fighters Association, IAFF Local #93

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IFC CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Add new text as follows:

703.5 Marking and identification. Firewalls, fire barriers and fire partitions required to have a fire-resistance rating shall be identified with signs or stenciling in a manner acceptable to the building official, Such identification shall be above any decorative ceiling or in concealed spaces, and shall include the wording: FIRE WALL, FIRE BARRIER OR FIRE PARTITION: PROTECT ALL OPENINGS, or other approved wording.

PART II – IFC

Add new text as follows:

703.5 Marking and identification. Firewalls, fire barriers and fire partitions required to have a fire-resistance rating shall be identified with signs or stenciling in a manner acceptable to the fire code official, Such identification shall be above any decorative ceiling or in concealed spaces, and shall include the wording: FIRE WALL, FIRE BARRIER OR FIRE PARTITION: PROTECT ALL OPENINGS, or other approved wording.

Reason: The purpose of the codes is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, etc. The concern that is addressed by this proposed code change is the need for installed fire-resistance rated assemblies to maintain their fire-resistance over the life of the building. Many people writing on fire safety issues complain about the fact that rated assemblies are often compromised over time. It can probably be assumed that most of that damage done to rated assemblies does not occur maliciously, with the intent to damage a needed safety feature. Rather, the installation of an incorrect replacement door or window, or the penetration of the assembly without proper firestopping, is probably done due to the lack of information regarding the assembly's fire rating. Without some type of identification, how can tradespeople, maintenance workers or inspectors determine that an assembly is being compromised and below minimum requirements? If the building's code-mandated fire compartmentation is below minimum requirements, then we can assume the building will not perform as designed with the proper protections for the occupants or the fire fighters responding.

Across the country fire departments are reducing staffing in an effort to meet more restrictive budgets. One of the areas where there have been reductions is the inspection capabilities. In Cleveland, Ohio, the fire department cut staffing by approximately one hundred positions in the last few years. The Fire Prevention Bureau levels have been cut by two thirds, this means the department is relying on the front line companies to identify code violations and then refer those violations to individuals with the expertise to follow up. The problem is the lack of ability for untrained personnel

to identify rated partitions and barriers. There is simply a lack of funding for enhanced training. Clearly identifying rated barriers and partitions will help the fire fighter on his inspection to identify any unacceptable breaches to rated assemblies. He can then refer the structure for a follow up inspection by a higher trained individual with the ability to identify the exact need to bring the structure back to the "Minimum Standard" of protection for the occupants.

Cost Impact: The code change proposal will have minimal cost impact.

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IFC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS15–06/07

703.5 (New), IFC 703.5 (New)

Proponent: Sean P. DeCrane, Cleveland Fire Fighters Association, representing International Association of Fire Fighters, Local #93

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IFC CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Add new text as follows:

703.5 Marking and Identification. Smoke Barriers and Smoke Partitions shall be identified with signs or stenciling in a manner acceptable to the building official. Such identification shall be above any decorative ceiling or in concealed spaces, and shall include the wording: SMOKE BARRIER or SMOKE PARTITION: PROTECT ALL OPENINGS, or other approved wording.

PART II – IFC

Add new text as follows:

703.5 Marking and Identification. Smoke Barriers and Smoke Partitions shall be identified with signs or stenciling in a manner acceptable to the fire code official. Such identification shall be above any decorative ceiling or in concealed spaces, and shall include the wording: SMOKE BARRIER or SMOKE PARTITION: PROTECT ALL OPENINGS, or other approved wording.

Reason: The purpose of the codes is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, etc. The concern that is addressed by this proposed code change is the need for installed Smoke Partition assemblies to maintain their resistance to the passage of smoke over the life of the building. Many people writing on fire safety issues complain about the fact that rated assemblies are often compromised over time. It can probably be assumed that most of that damage done to rated assemblies does not occur maliciously, with the intent to damage a needed safety feature. Without some type of identification, how can tradespeople, maintenance workers or inspectors determine that an assembly is being compromised? If the building's code-mandated smoke compartmentation is below minimum requirements then we can assume the building will not perform as designed with the proper protection for the occupants or the fire fighters responding.

Across the country fire departments are reducing staffing in an effort to meet more restrictive budgets. One of the areas where there have been reductions is the inspection capabilities. In Cleveland, Ohio, the fire department cut staffing by approximately one hundred positions in the last few years. The Fire Prevention Bureau levels have been cut by two thirds, this means the department is relying on the front line companies to identify code violations and then refer those violations to individuals with the expertise to follow up. The problem is the lack of ability for untrained personnel to identify rated partitions and barriers. There is simply a lack of funding for enhanced training. Clearly identifying rated Smoke Partitions will help the fire fighter on his inspection to identify any unacceptable breaches to rated assemblies. He can then refer the structure for a follow up inspection by a higher trained individual with the ability to identify the exact need to bring the structure back to the "Minimum Standard" of protection for the occupants.

Cost Impact: The code change proposal will have a minimal effect on the cost of construction.

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IFC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS16–06/07

704.2, 704.2.1, 704.2.2, 704.2.3

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

Revise as follows:

704.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the floor area 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 methods, whichever results in the lesser projection:~~ The distance from exterior edges of projections to the closest interior lot line or to an imaginary line between two buildings on the property shall not be less than two feet (610 mm). The provisions of Section 704.8 remain applicable with respect to determining the area allowed for openings in the exterior wall located beneath the projection.

- ~~1. A point one third the distance to the lot line from an assumed vertical plane located where protected openings are required in accordance with Section 704.8.~~
- ~~2. More than 12 inches (305 mm) into areas where openings are prohibited.~~

704.2.1 Type I and II construction. Projections from walls of Type I or II construction shall be of noncombustible materials or combustible materials as allowed by Sections 1406.3 and 1406.4.

704.2.2 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any approved material.

704.2.3 Combustible projections. ~~Combustible projections located where openings are not permitted or where protection of openings is required~~ the distance from the exterior edge of projection to the closest interior lot line or to an imaginary line between two buildings on the property is less than 6 feet (1830 mm) shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.

Exception: Type V construction shall be allowed for R-3 occupancies.

Reason: To simplify the application of the Code with respect to regulating the distance a projection may extend to the closest interior lot line or to an imaginary line between two buildings on the property, and to simplify the determination of when fire resistance rated construction for projections is required.

The fire separation distance relationship to openings in the legacy codes were divided into three distinct categories: all openings prohibited; protected openings required with a set upper limit on the total area of openings allowed; and unlimited unprotected openings. The IBC introduces a new concept, which allows an exterior wall to possess both protected and unprotected openings. Because IBC does not have absolute values where protected openings are required, the reference to an assumed vertical plane located where protected openings are required in Section 704.2, item No. 1 is confusing. The introduction of the added design flexibility has complicated the direct application of Section 704.2. It is not clear if unprotected exterior openings that are considered as protected due to presence of a Section 903.3.1.1 (NFPA 13) sprinkler system and an approved water curtain should be considered as protected or unprotected for determination of projection requirements.

The legacy codes depending upon Type of Construction and Occupancy Group designation prohibited the placement of an opening in an exterior wall at a fire separation distance of either five feet or three feet. Given there is no longer a reason to account for both a three foot and a five foot fire separation distance in determining the point where openings are not permitted, the Code can now directly state the distance from the exterior edge of a projection to the closest interior lot line or to an imaginary line between two buildings on the property shall not be less than two feet.

The emphasis of Section 704.2 should be on the distance from an exterior edge of a projection to the closest interior lot line or to an imaginary line between two buildings on the property, not on the length of the projection from the exterior wall of the building.

With regard to the Section 704.2.3 proposed revision. The following excerpt is taken from the 2003 International Building Code Commentary Volume I, published by the International Code Council, Inc., January 2004:

Table 704.8 contains the limitations for protected and unprotected openings in exterior walls in terms of percentages with respect to fire separation distances. The table is based on a formula that was developed under the following assumptions:

1. ... (Not applicable)
2. The fire plume projects 6 feet (1829 mm) from any opening.
3. ... (Not applicable)

Therefore a combustible unprotected projection possessing an exterior edge distance, from the closest interior lot line or to an imaginary line between two buildings on the property, in excess of six feet should be reasonably removed from direct flame impingement and other destructive effects of a fire originating on either the adjacent lot or from another building located on the lot on which the subject projection is situated.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS17 – 06/07

704.2, 704.2.1, 704.2.2, 704.2.3

Proponent: Keith Peetz, City and County of Denver, Colorado Chapter ICC

Revise as follows:

704.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the floor area 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 methods, whichever results in the lesser projection:~~ The distance from exterior edges of projections to the closest interior lot line or to an imaginary line between two buildings on the property shall not be less than four feet (1220 mm). The provisions of Section 704.8 remain applicable with respect to determining to the area allowed for openings in the exterior wall located beneath the projection.

- ~~1. A point one-third the distance to the lot line from an assumed vertical plane located where protected openings are required in accordance with Section 704.8.~~
- ~~2. More than 12 inches (305 mm) into areas where openings are prohibited.~~

704.2.1 Type I and II construction. Projections from walls of Type I or II construction shall be of noncombustible materials or combustible materials as allowed by Sections 1406.3 and 1406.4.

704.2.2 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any approved material.

704.2.3 Combustible projections. ~~Combustible projections located where openings are not permitted or where protection of openings is required~~ the distance from the exterior edge of projection to the closest interior lot line or to an imaginary line between two buildings on the property is less than 6 feet (1830 mm) shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.

Exception: Type V construction shall be allowed for R-3 occupancies.

Reason: To simplify the application of the Code with respect to regulating the distance a projection may extend to the closest interior lot line or to an imaginary line between two buildings on the property, and to simplify the determination of when fire resistance rated construction for projections is required.

The fire separation distance relationship to openings in the legacy codes were divided into three distinct categories: all openings prohibited; protected openings required with a set upper limit on the total area of openings allowed; and unlimited unprotected openings. The IBC introduces a new concept, which allows an exterior wall to possess both protected and unprotected openings. Because IBC does not have absolute values where protected openings are required, the reference to an assumed vertical plane located where protected openings are required in Section 704.2, item No. 1 is confusing. The introduction of the added design flexibility has complicated the direct application of Section 704.2. It is not clear if unprotected exterior openings that are considered as protected due to presence of a Section 903.3.1.1 (NFPA 13) sprinkler system and an approved water curtain should be considered as protected or unprotected for determination of projection requirements.

The legacy codes depending upon Type of Construction and Occupancy Group designation prohibited the placement of an opening in an exterior wall at a fire separation distance of either five feet or three feet. Given there is no longer a reason to account for both a three foot and a five foot fire separation distance in determining the point where openings are not permitted, the Code can now directly state the distance from the exterior edge of a projection to the closest interior lot line or to an imaginary line between two buildings on the property shall not be less than two feet.

The emphasis of Section 704.2 should be on the distance from an exterior edge of a projection to the closest interior lot line or to an imaginary line between two buildings on the property, not on the length of the projection from the exterior wall of the building.

With regard to the Section 704.2.3 proposed revision The following excerpt is taken from the *2003 International Building Code Commentary Volume I*, published by the International Code Council, Inc., January 2004:

Table 704.8 contains the limitations for protected and unprotected openings in exterior walls in terms of percentages with respect to fire separation distances. The table is based on a formula that was developed under the following assumptions:

- 1 (Not applicable)
2. The fire plume projects 6 feet (1829 mm) from any opening.
3. ... (Not applicable)

Therefore a combustible unprotected projection possessing an exterior edge distance, from the closest interior lot line or to an imaginary line between two buildings on the property, in excess of six feet should be reasonably removed from direct flame impingement and other destructive effects of a fire originating on either the adjacent lot or from another building located on the lot on which the subject projection is situated.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS18–06/07

704.3

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

Revise as follows:

704.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them.

Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the exterior wall and opening protection of the existing building meet the criteria as set forth in Sections 704.5 and 704.8.

Exceptions:

1. Buildings created by a fire wall positioned in a single structure shall not assume an imaginary line to be placed between them for the purpose of determining opening protection between the two buildings.
2. Two or more buildings on the same lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

Reason: I continue to get confusion from code officials as to whether the placement of a firewall in a building requires openings in that wall to be placed 3' from an imaginary line placed in the middle of the firewall, or in the case of independent firewalls, between the two firewalls. The confusion stems from the fact that firewalls in buildings actually create separate buildings. To continue this logic, the firewall(s) creating the separate buildings are interpreted as exterior walls to each building. If one continues this logic, then openings in the firewall must comply with Table 704.8. I believe this is incorrect to interpret a firewall as an exterior wall and apply the requirements of Table 704.8. to the openings. Openings in a firewall are appropriately regulated in Section 705.8.

The intent of the proposed text is to eliminate the flawed logic described above.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS19-06/07

704.5

Proponent: Bob Boyer, Building Officials Association of Florida (BOAF)

Revise as follows:

704.5 Fire-resistance ratings. Exterior wall shall be fire-resistance rated in accordance with Tables 601 and 602 and this section. ~~The fire-resistance rating of exterior walls with a fire separation distance of greater than 5 feet (1524 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 shall be rated for exposure to fire from both sides.~~ for any of the following conditions:

1. Bearing walls.
2. The fire separation distance is less than 10 feet (3048 mm).

The required fire resistance rating of all other exterior walls shall be required to be rated for exposure to fire from the inside only.

Reason: The effect of this proposed amendment is to require all exterior walls required to have a fire resistance rating to be fire tested from both sides independently to determine their fire resistance rating, regardless of the fire separation distance. This is consistent with Section 709.5 Nonsymmetrical Wall Construction of the 1997 UBC.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS20-06/07

704.5

Proponent: Laura Blaul, Orange County Fire and George Thomas, P.E., C.B.O, Pleasanton, CA, representing California Fire Chiefs Association and Tri-Chapter Code Committee

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 fire-resistance rating of exterior walls with a fire separation distance of greater than 5 feet (1524 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 (1524mm) or less shall be rated for exposure to fire from both sides.~~ for any of the following conditions:

1. Bearing walls.
2. Nonbearing exterior walls with a fire separation distance equal to 10 feet (3048 mm) or less.

For all other conditions the required fire resistance rating of exterior walls shall be rated for exposure to fire from the inside only.

Reason: This code change addresses our concerns about the present reduction for required fire resistance ratings of exterior walls more than 5 feet from a property line. We do not believe that past experience provides justification to permit the fire testing of exterior walls only from the interior side when the exterior walls of two buildings are within 10 feet of another wall. Several fires have been reported recently where combustible cladding on dwellings in close proximity to property lines have quickly ignited the building on the adjacent property. Not subjecting the exterior side of these exterior walls to the fire tested can only exacerbate the potential for fire spread.

The modification for bearing walls is related to our concern about fires that may break out of an opening in an exterior wall to expose the exterior wall from the outside, while simultaneously exposing the exterior wall from the inside. No standardized fire test presently evaluates such an exposure to determine a fire resistance rating for an exterior wall application. This type of exposure would be significantly more severe than the standard ASTM E119 fire exposure, yet Section 704.5 would allow the wall to be tested from the inside only if the fire separation distance is 5 feet or more. We believe that the exterior bearing wall application is critical from a structural stability perspective and should not allow the reduced fire testing presently permitted, even for fire separation distances greater than 5 feet.

The legacy code in the western portions of the country required that nonsymmetrical wall construction be tested for fire resistance from both sides, regardless of the fire separation distance, and the shortest duration obtained from the two tests was the rating applied the exterior wall. Although it is difficult to provide definitive fire loss data to show the importance of this one modification, it should be noted that the western states have the best fire loss records in country.

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

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

FS21-06/07

Table 704.8

Proponent: Carroll Lee Pruitt, FAIA, Pruitt Consulting, Inc.

Revise table as follows:

**TABLE 704.8
 MAXIMUM AREA OF EXTERIOR WALL OPENINGS^a**

CLASSIFICATION OF OPENING	FIRE SEPARATION DISTANCE (feet)							
	0 to 3 ^{f,j}	Greater than 3 to 5 ^{c,g}	Greater than 5 to 10 ^{c,e,g,h}	Greater than 10 to 15 ^{d,e}	Greater than 15 to 20 ^{d,g}	Greater than 20 to 25 ^{d,g}	Greater than 25 to less than 30 ^{d,g}	Greater Than or equal to 30
Unprotected	Not Permitted	Not Permitted ^c	10%	15% ⁱ	25%	45% ⁱ	70% ⁱ	No Limit ^b
Protected	Not Permitted	15%	25%	45%	75%	No Limit ^b	No Limit ^b	No Limit ^b

For SI: 1 foot = 304.8 mm.

- a. Values given are percentage of the area of the exterior wall.
- b. See Section 704.7 for unexposed surface temperature.
- c. For occupancies in Group R-3, the maximum percentage of unprotected and protected exterior wall openings shall be 25 percent.
- d. The area of openings in an open parking structure with a fire separation distance of greater than 10 feet shall not be limited.
- e. For occupancies in Group H-2 or H-3, unprotected openings shall not be permitted for openings with a fire separation distance of 15 feet or less.
- f. For requirements for fire walls for buildings with differing roof heights, see Section 705.6.1.
- g. The area of unprotected and protected openings is not limited for occupancies in Group R-3, with a fire separation distance greater than 5 feet.
- h. For special requirements for Group U occupancies, see Section 406.1.2.
- i. Buildings whose exterior bearing wall, exterior nonbearing wall and exterior structural frame are not required to be fire-resistance rated by Table 601 or 602 shall be permitted to have unlimited unprotected openings.
- j. Includes accessory buildings to Group R-3.

Reason: The purpose of this proposal is to bring the Table in line with other code provisions including Table 602 and Section 506.2.

Both Table 602 and Section 506.2 use 30 feet as the determining factor. Table 602 for the point where exterior walls are not required to be protected. Section 506.2 uses 30 feet as the point at which the greatest frontage increase is normally granted. It does not make sense that in Table 704.8, a dimension of greater than 30 feet is required for the ultimate determination in allowing unlimited unprotected openings. This code change will reconcile this Table with Table 602 and Section 506.2.

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

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

FS22-06/07

Table 704.8

Proponent: Marshall A. Klein, P.E., Marshall A. Klein & Associates, Inc., representing Marshall A. Klein & Associates, Inc.

Add table footnote as follows:

**TABLE 704.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS^a**

CLASSIFICATION OF OPENING	FIRE SEPARATION DISTANCE (feet)							
	0 to 3 ^{f,j,k}	Greater than 3 to 5 ^{c,g}	Greater than 5 to 10 ^{c,e,g,h}	Greater than 10 to 15 ^{d,e,g}	Greater than 15 to 20 ^{d,g}	Greater than 20 to 25 ^{d,g}	Greater than 25 to 30 ^{d,g}	Greater than 30
Unprotected	Not Permitted	Not Permitted ^c	10% ⁱ	15% ⁱ	25% ⁱ	45% ⁱ	70% ⁱ	No Limit ^b
Protected	Not Permitted	15%	25%	45%	75%	No Limit ^b	No Limit ^b	No Limit ^b

For SI: 1 foot = 304.8 mm.

- a. Values given are percentage of the area of the exterior wall.
- b. See Section 704.7 for unexposed surface temperature.
- c. For occupancies in Group R-3, the maximum percentage of unprotected and protected exterior wall openings shall be 25 percent.
- d. The area of openings in an open parking structure with a fire separation distance of greater than 10 feet shall not be limited.
- e. For occupancies in Group H-2 or H-3, unprotected openings shall not be permitted for openings with a fire separation distance of 15 feet or less.
- f. For requirements for fire walls for buildings with differing roof heights, see Section 705.6.1.
- g. The area of unprotected and protected openings is not limited for occupancies in Group R-3, with a fire separation distance greater than 5 feet.
- h. For special requirements for Group U occupancies, see Section 406.1.2.
- i. Buildings whose exterior bearing wall, exterior nonbearing wall and exterior structural frame are not required to be fire-resistance rated by Table 601 or 602 shall be permitted to have unlimited unprotected openings.
- j. Includes accessory buildings to Group R-3.
- k. For openings in a firewall for buildings on the same lot, see Section 705.8.

Reason: Addition of this new footnote "k" is proposed for editorial purposes as well as for user friendliness. There has been some confusion by code users on whether or not a firewall can have openings between buildings on the same lot under the IBC.

Under Table 704.8, since the exterior walls of two buildings on the same lot with a fire separation distance of 0' would not be permitted to have any openings in these exterior walls, some users are confused that replacing such exterior walls with a common firewall designed under Section 705 would then permit protected openings between the two buildings in the firewall.

Therefore, this new footnote "k" placed over the 0' fire separation distance column in the Table will eliminate such confusion, and direct the user to the appropriate section of the Code for opening protectives when a firewall is used between two buildings on the same lot.

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

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

FS23-06/07

Table 704.8, Table 602

Proponent: Randall R. Dahmen, P.E., Licensed Commercial Building Inspector, Waunakee, Wisconsin

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise table as follows:

**TABLE 704.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS^{a, k}**

CLASSIFICATION OF OPENING	FIRE SEPARATION DISTANCE (feet)							
	0 to 3 ^{f,j}	Greater than 3 to 5 ^c	Greater than 5 to 10 ^{c,e,g,h}	Greater than 10 to 15 ^{d,e,g}	Greater than 15 to 20 ^{d,g}	Greater than 20 to 25 ^{d,g}	Greater than 25 to 30 ^{d,g}	Greater than 30
Unprotected	Not Permitted	Not Permitted ^c	10% ⁱ	15% ⁱ	25% ⁱ	45% ⁱ	70% ⁱ	No Limit ^b
Protected	Not Permitted	15%	25%	45%	75%	No Limit ^b	No Limit ^b	No Limit ^b

For SI: 1 foot = 304.8 mm.

- a. Values given are percentage of the area of the exterior wall.
- b. See Section 704.7 for unexposed surface temperature.
- c. For occupancies in Group R-3, the maximum percentage of unprotected and protected exterior wall openings shall be 25 percent.
- d. The area of openings in an open parking structure with a fire separation distance of greater than 10 feet shall not be limited.
- e. For occupancies in Group H-2 or H-3, unprotected openings shall not be permitted for openings with a fire separation distance of 15 feet or less.
- f. For requirements for fire walls for buildings with differing roof heights, see Section 705.6.1.
- g. The area of unprotected and protected openings is not limited for occupancies in Group R-3, with a fire separation distance greater than 5 feet.
- h. For special requirements for Group U occupancies, see Section 406.1.2.
- i. Buildings whose exterior bearing wall, exterior nonbearing wall and exterior structural frame are not required to be fire-resistance rated by Table 601 or 602 shall be permitted to have unlimited unprotected openings.
- j. Includes accessory buildings to Group R-3.
- k. For application to duct penetrations, the most restrictive requirements of Sections 704.8 and 716.5 shall be applied.

PART II – IBC GENERAL

Revise table as follows:

**TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS
BASED ON FIRE SEPARATION DISTANCE^{a, e, f}**

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

For SI: 1 foot = 304.8 mm.

- a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.
- b. For special requirements for Group U occupancies see Section 406.1.2
- c. See Section 705.1.1 for party walls.
- d. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.
- e. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.
- f. Fire rated exterior wall assemblies are to be addressed by Section 706 unless designed with the intent to meet the requirements of Section 705.

Reason: Table 602 defines when fire rated exterior walls are required, depending on the occupancy and the exterior wall's proximity to lot lines or other buildings. When there are penetrations to the exterior wall, Table 704.8 defines the maximum amount of openings allowed. If the penetrations consist of windows or doors, Section 716 addresses the minimum required fire protection ratings if protection is required. If the penetrations are due to ductwork, the codes does not define what the assembly is in order to properly apply Section 716.5. The code does not define, under the current wording in Section 602, if fire rated exterior wall assemblies are to be treated as a fire wall, fire barrier or a fire partition. Based on the definitions of each, the closest would seem to be a "fire barrier" per Section 706. In some situations, a designer may choose to create a fire wall, or party wall, which has more restrictive requirements. Section 704.8 addresses the "maximum area of exterior wall openings" and Section 716.5 addresses duct penetrations to fire barriers and fire walls. In order to maintain continuity, the requirement to use the most restrictive requirements of the two sections for application of fire dampers seems only reasonable.

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

PART I – IBC FIRE SAFETY

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

PART II – IBC GENERAL

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

FS24 – 06/07

704.8, 704.12

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

1. Delete and substitute as follows:

704.8 Allowable area of openings. The maximum area of unprotected or protected openings permitted in an exterior wall in any story shall not exceed the values set forth in Table 704.8. Where both unprotected and protected openings are located in the exterior wall in any story, the total area of the openings shall comply with the following formula:

$$\frac{A}{a} + \frac{A_u}{a_u} \leq 1.0 \quad \text{(Equation 7-2)}$$

where:

A = Actual area of protected openings, or the equivalent area of protected openings, A_e (see Section 704.7).

a = Allowable area of protected openings.

A_u = Actual area of unprotected openings.

a_u = Allowable area of unprotected openings.

TABLE 704.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS^a

704.8.1 Automatic sprinkler system. In buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum allowable area of unprotected openings in occupancies other than Groups H-1, H-2 and H-3 shall be the same as the tabulated limitations for protected openings.

704.8.2 First story. In occupancies other than Group H, unlimited unprotected openings are permitted in the exterior walls of the first story above grade facing a street that have a fire separation distance of greater than 15 feet (4572 mm) or facing 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*.

704.8 Openings. Openings in exterior walls shall have a degree of opening protection based on the fire separation distance as specified in Table 704.8.

704.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 704.8.

Exceptions:

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the exterior walls of the first story above grade facing a street that has a fire separation distance of greater than 15 feet (4572 mm), or facing an unoccupied space. Such 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 structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.

704.8.2 Protected openings. Where 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.

704.8.3 Unprotected openings. Where unprotected openings are permitted, windows and doors shall be constructed of any approved materials. Glazing shall conform to the requirements of Chapters 24 and 26.

704.8.4 Mixed openings. Where both unprotected and protected openings are located in the exterior wall in any story of a building, the total area of openings shall be determined in accordance with the following:

$$(A_p \div a_p) + (A_u \div a_u) \leq 1 \quad \text{(Equation 7-2)}$$

where:

A_p = Actual area of protected openings, or the equivalent area of protected openings, A_e (see Section 704.7).

a_p = Allowable area of protected openings.

A_u = Actual area of unprotected openings.

a_u = Allowable area of unprotected openings.

**TABLE 704.8
MAXIMUM AREA OF EXTERIOR WALL
OPENINGS BASED ON FIRE SEPARATION DISTANCE
AND DEGREE OF OPENING PROTECTION**

FIRE SEPARATION DISTANCE (feet)	0 to less than 3^b			3 to less than 5^{c,d}			5 to less than 10^{d,e}		
	DEGREE OF OPENING PROTECTION	UP NS	UP S ^h	P	UP NS	UP S ^h	P	UP NS	UP S ^h
ALLOWABLE AREA^a	NP	NP	NP	NP	15%	15%	10% ^g	25%	25%

10 to less than 15^{d,e,f}			15 to less than 20^{e,f}			20 to less than 25^{e,f}		
UP NS	UP S ^h	P	UP NS	UP S ^h	P	UP NS	UP S ^h	P
15% ^g	45%	45%	25%	75%	75%	45%	NL	NL

25 to less than 30^{e,f}			30 or greater		
UP NS	UP S ^h	P	UP NS	UP S ^h	P
70%	NL	NL	NL	NR	NR

For SI: 1 foot = 304.8 mm.

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

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

P = Openings protected with an opening protective assembly in accordance with Section 704.8.1.

NP = Not permitted.

NL = No limit

NR = Not required

a. Values indicated are the percentage of the area of the exterior wall, per story.

b. For the requirements for fire walls of buildings with differing heights, see Section 705.6.1.

c. The maximum percentage of unprotected and protected openings shall be 25 percent for Group R-3 occupancies, as applicable in Section 101.2.

d. Unprotected openings shall not be permitted for openings with a fire separation distance of less than 15 feet for Group H-2 and H-3 occupancies.

e. The area of unprotected and protected openings shall not be limited for Group R-3 occupancies, as applicable in Section 101.2, with a fire separation distance of 5 feet or greater.

- f. The area of openings in an open parking structure with a fire separation distance of 10 feet or greater shall not be limited.
- g. Includes buildings accessory to Group R-3, as applicable in Section 101.2.
- h. Not applicable to Group H-1, H-2 and H-3 occupancies.

704.8.5 Vertical separation of openings. (Text to remain unchanged--former Section 704.9)

704.8.6 Vertical exposure. (Text to remain unchanged--former Section 704.10)

704.9 Joints. (Text to remain unchanged--former Section 704.13)

704.10 Ducts and air transfer openings. (Text to remain unchanged--former Section 704.14)

704.11 Parapets. (Text to remain unchanged--former Section 704.11)

2. Delete without substitution:

~~**704.12 Opening protection.** Windows in exterior walls required to have protected openings in accordance with other sections of this code or determined to be protected in accordance with Section 704.3 or 704.8 shall comply with Section 715.5. Other openings required to be protected with fire door or shutter assemblies in accordance with other sections of this code or determined to be protected in accordance with Section 704.3 or 704.8 shall comply with Section 715.4.~~

~~**Exception:** Opening protectives are not required where the building is protected throughout by an automatic sprinkler system and the exterior openings are protected by an approved water curtain using automatic sprinklers approved for that use. The sprinklers and the water curtain shall be installed in accordance with Section 903.3.1.1 and shall have an automatic water supply and fire department connection.~~

~~**704.12.1 Unprotected openings.** Where protected openings are not required by Section 704, windows and doors shall be constructed of any approved materials. Glazing shall conform to the requirements of Chapters 24 and 26.~~

Reason: This proposal is intended to clarify the provisions for the determination of opening protection requirements in exterior wall construction in a logical and understandable format. Presently, exterior wall opening protection requirements are fragmented in several sections and contain no clear charging language. General opening protection requirements are located in Section 704.12 while more specific allowable area of opening requirements are found in preceding Section 704.8. The latter provisions should be subordinate to the former. For legal purposes a defining charging statement should be provided.

One of the strengths of the International Building Code is the orderly method for the determination of opening protection requirements contained in the fire resistance assembly sections of Chapter 7. For instance, given the requirement for a fire wall, one would go to Section 705 for detailed construction provisions, to include openings at Section 705.8, penetrations at Section 705.9, joints at Section 705.10 and ducts and air transfer openings at Section 705.11. These sections in turn, reference one to the applicable sections for specific details for the various methods of maintaining continuity of construction. This proposal organizes exterior wall opening protection requirements in a similar fashion. This enhances user friendliness and technical accuracy as it supports a consistent procedure for the determination of opening protection requirements throughout Chapter 7.

A general description of the alterations is as follows:

Section 704.8: The section heading is more general and is consistent with Sections 705.8, 706.6, 707.7, 708.6, 709.5 and 710.5. The section provides general charging language for the determination of exterior wall opening protection requirements that is currently not stated.

Section 704.8.1: This specific provision was formally located in Section 704.8. Exception 1 is a generally applicable provision that was formally located in Section 704.8.2. Exception 2 is a generally applicable provision that was formally located in Table 704.8, Footnote i.

Section 704.8.2: This general charging provision is similar to that formally located in Section 704.12. The exception was formerly located in Section 704.12.

Section 704.8.3: This is a generally applicable provision that was formally located in Section 704.12.1.

Section 704.8.4: Minor editorial modifications have been made to the mixed opening provisions, such as, making the equation more simple and better identifying the equation variables.

Table 704.8: The format of Table 704.8 has been modified for purposes of the accurate determination of technical requirements. Perhaps most importantly, horizontal cells under each applicable fire separation distance entry value describe each possible degree of opening protection condition and the allowable area for each such condition. Of particular importance is the introduction of a column recognizing unprotected openings in sprinklered buildings. This provision is currently only contained in the text at Section 704.8.1. Unfortunately, many code users seek requirements in the tables without consulting the charging text. The proposed table would minimize the possibility of erroneously determining the allowable area of unprotected openings in sprinklered buildings--a very common design condition. A subtle feature of the reformatted table is the threshold values for the listed fire separation distances. They have been adjusted to coincide with Table 602. For example, current Table 704.8 specifies a fire distance spread of, "greater than 5 to 10." Conversely, Table 602 references, "equal to or greater than 5 to less than 10." This modification will allow for the correct and relative determination of opening protective assemblies which occur exactly at those threshold fire separation distances. The footnotes have been reorganized to coincide with the increasing fire separation distances. Numerous minor editorial changes have been made to clarify the understanding of technical intent (i.e. No Limit to No Requirement for protected openings greater than 30 feet).

Sections 704.8.5 and 704.8.6: Both sections which are applicable to openings in exterior walls have been incorporated into Section 704.8 (openings). These provisions were formerly located at Sections 704.9 and 704.10, respectively.

Sections 704.9 through 704.11: The remaining sections have been reorganized to be consistent with the continuity provisions of the other fire-resistance rated assembly sections. These provisions were formerly located at Sections 704.13, 704.14 and 704.11, respectively.

In summary, the proposed submittal will clarify the intent of the International Building Code by providing a logical organization of technical requirements while using accepted terminology and format. As previously stated, the proposal is not intended to achieve any technical changes. The proposed technical reorganization and language contained in this submittal would represent a significant improvement to the 2009 Edition of the International Building Code in this important and frequently applicable area.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS25-06/07

704.10

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

Revise as follows:

704.10 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 adjoining building or adjacent structure that is within a horizontal based on assuming an imaginary line between them. The opening protectives are required where the fire separation distance of between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm) of the wall in which the opening is located. Application of the exception to Section 704.3 for two or more buildings on the same lot as portions of one building is not permitted.

Exception: Opening protectives are not required where the roof construction 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 adjoining building 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. Application of the exception to Section 704.3 for two or more buildings on the same lot as portions of one building is permitted.

Reason: The purpose of this proposal is to correct technical flaws in the current provisions on vertical exposure of the exterior walls of a building by an adjacent (lower) building or structure. The threshold for requiring opening protection is a horizontal fire separation distance of less than 15 feet. By definition (see Section 702.1), fire separation distance is measured from a building face to an interior lot line, the centerline of a public way, or an imaginary line between two buildings on the same lot. The current language does not establish the existence of an imaginary line from which to measure fire separation distance.

It is possible that an imaginary line could exist between the buildings. Section 704.3 requires the assumption of an imaginary line between two adjacent buildings on the same lot for the purpose of determining required wall and opening protection and roof covering requirements. The exception to Section 704.3, however, permits two or more buildings on the same lot to be considered portions of one building making the presence of an imaginary line moot.

The threshold for requiring opening protection in Section 704.10 is also a single horizontal fire separation distance of less than 15 feet. Since fire separation distance is measured between the faces of two buildings on the same lot and an imaginary line between them, there are always two fire separation distances, not just one fire separation distance. It is not clear from the current language which one of the fire separation distances is intended.

The proposal corrects these and other technical flaws by establishing the presence of an imaginary line between the buildings and by basing the requirement for opening protection on the fire separation distance between the imaginary line and the adjacent (lower) building or structure. Establishing an imaginary line eliminates the option of considering the buildings as portions of one building, which is permitted by the exception to Section 704.3. Instead, the fire separation distance between the imaginary line and higher building must be considered and fire resistance and opening protection will be required at the exterior wall of the higher building based on that fire separation distance (see Section 704.3). Consequently, opening protection may be required at areas of the exterior wall other than required by Section 704.10. It is also conceivable that opening protection may be prohibited or limited in area based on the more severe of the provisions in Sections 704.3 and 704.10. A sentence is added at the end of Section 704.10 making it clear that the exception to Section 704.3 is not permitted to be used in this case.

In the exception to Section 704.10, "of the adjacent building or structure" is added because it is not clear from the current language which roof construction is intended: the higher building or the adjacent (lower) building or structure. Also, "adjoining building" is replaced by "exterior wall facing the imaginary line" because the current language literally requires the roof construction of one of the buildings (which one is not clear) to be 1-hour fire-resistance-rated for a distance of 10 feet from the adjoining building, which could apply to the fire separation distance and not to any portion of the roof construction of either building.

The exception to Section 704.10 intends to exempt the requirements for opening protectives at the higher building provided the roof of the adjacent (lower) building or structure is 1-hour fire-resistance-rated for at least 10 feet from the exterior wall facing the imaginary line. If this exception is employed, it is reasonable to permit the exception to Section 704.3 permitting two or more buildings on the same lot to be considered as portions of the same building to also be employed. The proposal adds language making this clear.

The reference to "horizontal" for fire separation distance is deleted for consistency with use of "fire separation distance" without reference to "horizontal" elsewhere in the code (i.e., Section 704.5 and Table 704.8).

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS26-06/07

704.11

Proponent: Joe Holland, Hoover Treated Wood Products, Inc.

Revise as follows:

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 and supporting construction, is constructed entirely of noncombustible materials or fire-retardant-treated wood.
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 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 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.

Reason: To allow the elimination of a parapet when the roof structure is constructed with FRTW.

FRTW has several unique characteristics that allow it to be used in roof construction: A fire can not be started with FRTW; when exposed to fire from an external source it will not spread the fire, once the external source of the fire is consumed or extinguished the FRTW will self extinguish.

Section 2303.2 of the IBC mandates FRTW be tested using ASTM E84. The material must have a Class A flame spread index (25 or less) (materials in the marketplace are in the 10 to 15 range). The test must be extended an additional 20 minutes. During the extended test, the flame front can not progress more than 10 ½ feet beyond the centerline of the burners and at the end of the 20 minutes it must not show any significant progressive combustion.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS27-06/07

705.1

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

Revise as follows:

705.1 General. Each portion of a building separated by one or more fire walls that comply with the provisions of this section shall be permitted to be considered a separate building for the purpose of determining area limitations, continuity of firewalls, limitations of number of stories and type of construction. The extent and location of such fire walls shall provide a complete separation. Where a fire wall also separates occupancies that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation shall apply.

Reason: The proposed language clarifies the intent of Section 705.1 by removing the mandatory language that requires buildings that are separated from each other by fire walls be considered as separate buildings. In a case such as a parking garage on the first floor of a building (per IBC Section 509) with residential buildings on top, the entire building is considered as one for the purpose of fire protection design, water and sewer system design, means of egress, number of elevators, number of fire pumps, number of generators, and similar building systems and equipment. The present language implies that each section separated by fire walls to be considered as separate buildings which may not be practical and will place a burden on the owner. The proposed language clarifies the intent and gives the option to consider each building separated by a fire wall as a separate building.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS28-06/07

705.3

Proponent: Steve Haines, City of Macon, Georgia, representing ICC Region 8 Chapter

Revise as follows:

705.3 Materials. Fire walls shall be of any approved noncombustible materials.

~~**Exception:** Buildings of Type V construction.~~

Reason: Delete current provisions to improve the fire safety requirements in the code. Fire walls permit large buildings to be constructed with separate fire compartments so that the sum of the areas of the individual compartments can exceed the allowable area in Table 503 of the code based on occupancy group and type of construction. Fire walls are assigned a high degree of reliability by the provisions for structural integrity specified in 705.2. During the many years jurisdictions in the ICC Region 8 area have been applying code requirements to buildings the provisions for fire walls have included, implicitly or explicitly, provisions that these walls be constructed of non-combustible materials. Because of the good track record for the performance of these fire wall requirements when three of the Region 8 States (Georgia, North Carolina and South Carolina) adopted the IBC that code was amended to retain the requirements that fire walls be constructed of non-combustible materials based on this track record.

In addition, because the IBC also permits many occupancy groups in buildings constructed of Type V (wood frame) construction to be built to larger areas than previously permitted by the legacy codes, limiting the materials used in the construction of these fire walls becomes especially important.

Cost Impact: The code change will increase the cost of construction for some buildings of Type V construction.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS29-06/07

705.5.1

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

Revise as follows:

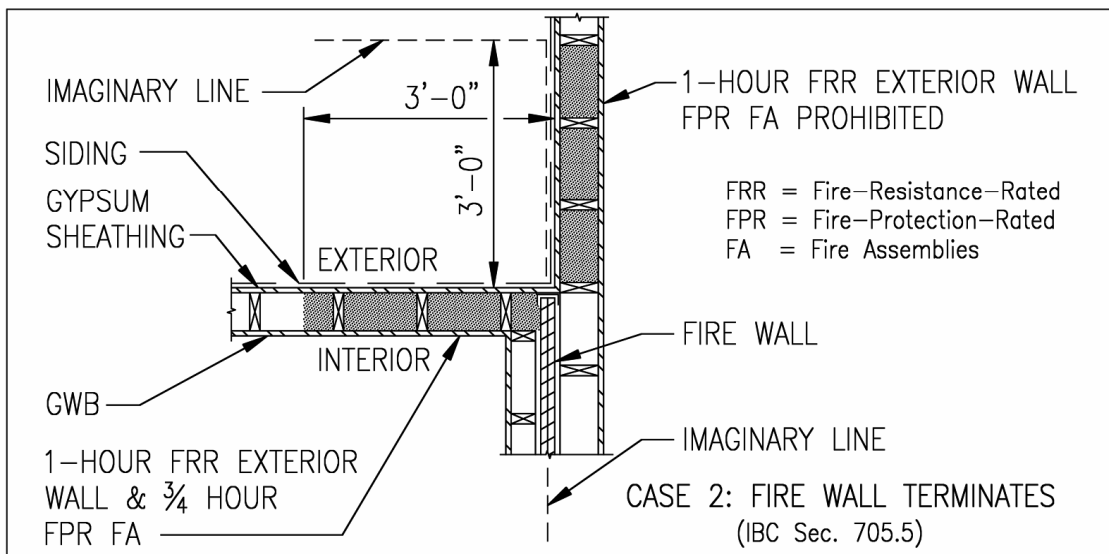
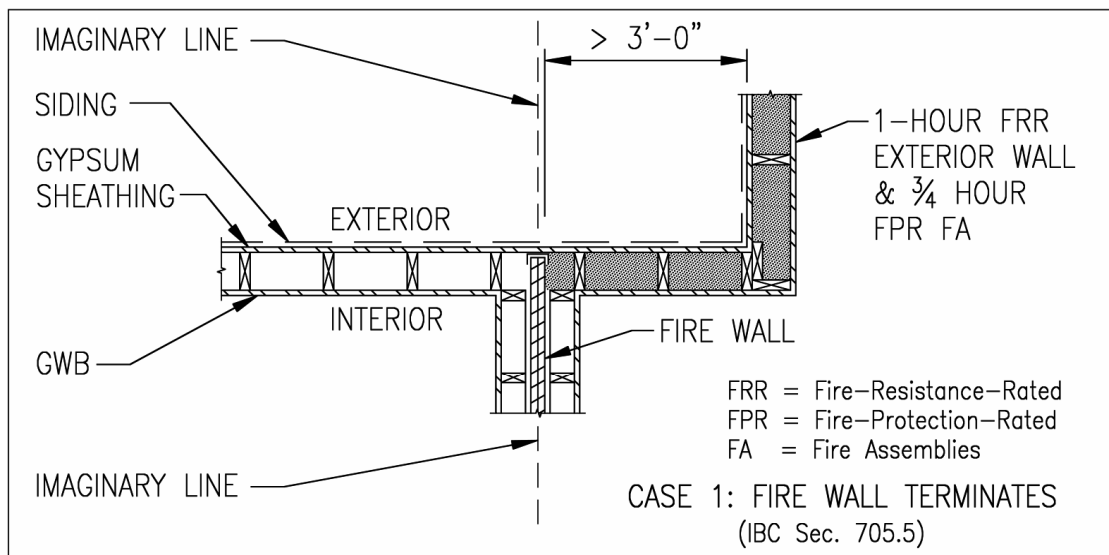
705.5.1 Exterior walls. ~~Where the fire wall intersects the terminates within an exterior walls the fire-resistance rating for the exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4-hour opening protection where opening protection is required. The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1220 mm) on each side of the intersection of the fire wall to exterior wall as permitted by Section 705.5, the buildings on either side of the fire wall shall be assumed to have an imaginary line between them. The location of the assumed imaginary line shall be such that the exterior wall and opening protection of each building shall comply with the criteria set forth in Sections 704.5 and 704.8. Such protection is not required for exterior walls intersections terminating at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.~~

Reason: Section 705.1 states that each portion of a building separated by one or more fire walls complying with Section 705 shall be considered a separate building. Section 704.3 states that buildings on the same lot shall be assumed to have an imaginary line between them. This imaginary line is employed in the same fashion as a lot line is used between buildings on adjoining lots. It determines the required fire resistance and opening protection of exterior walls at buildings on the same lot. This approach is equally valid at portions of buildings considered separate buildings due to the presence of a fire wall. The purpose of this proposal is to establish requirements for the protection of exterior walls on either side of fire walls that are comparable to the requirements for buildings on the same lot.

The proposal also addresses several problematic aspects of the current provisions. Section 705.5.1 applies to exterior walls intersected by fire walls, not exterior walls where fire walls are permitted to terminate. Consequently, the current requirements are limited to the basic case of horizontal continuity: extension of the fire wall at least 18 inches beyond the exterior surface of the exterior walls. The current requirements do not apply when the exceptions to Section 705.5 are employed, which permit termination within the exterior wall (i.e., interior surface of exterior sheathing). The hazard addressed by Section 705.5.1, however, is more evident when the exceptions to Section 705.5 are employed rather than the basic case.

Determining the fire-resistance rating and opening protection of the exterior wall "where opening protection is required" is also problematic. The protection ought to be based on the proximity of the exterior wall on one side of the fire wall to the exterior wall on the other side of the fire wall, which is moot when the exterior angle formed by the exterior walls is equal or greater than 180 degrees.

The accompanying diagrams illustrate applications of the proposed changes requiring fire-resistance-rated construction at the exterior wall on either side of the fire wall but also permitting openings at certain fire separation distances from the imaginary line provided they are 3/4-hour fire-protection-rated assemblies. Once permitted, the allowable percentage of fire-protection-rated would be small at small fire separation distances, increasing at larger distances until unprotected openings are permitted.



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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS30-06/07

705.5.1

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

Delete and substitute as follows:

705.5.1 Exterior walls. Where the fire wall intersects the exterior walls, the fire-resistance rating for the exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4-hour opening protection where opening protection is required. The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1220 mm) on each side of the intersection of the firewall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.

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

1. The exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4 hour protection where opening protection is required. The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1220 mm) on each side of the intersecting firewall.

2. Buildings or spaces on both sides of the intersecting firewall shall be assumed to have an imaginary lot line located parallel to the interior firewall. The imaginary lot line shall be permitted to extend in any direction beyond the exterior of the firewall, terminating at other real or imaginary lot lines. The location of the assumed line in relation to the exterior walls and the firewall shall be such that the exterior wall and opening protection meets the requirements set forth in Section 704.5 and 704.8.

Reason: The proposed language adds an alternate method to Section 705.5.1 by adding a similar application as allowed Section 704.3 by inclusion of imaginary property lines for determination of exterior wall and opening protections. This application will add flexibility to the design and still meets the intent of the present code section: To prevent the spread of fire and smoke to the adjacent building at the fire wall. For example, a fire wall terminating at exterior walls that intersect at 90 degrees from each other, with construction type of II-B, would allow one exterior wall to have a one hour fire resistance rating without any openings for 10 ft and the other exterior wall and openings to be unprotected.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS31-06/07

705.5.1

Proponent: Peter Bemelen, PE, City and County of Denver, representing Colorado Chapter ICC

Delete and substitute as follows:

~~**705.5.1 Exterior walls.** Where the fire wall intersects the exterior walls, the fire resistance rating for the exterior walls on both sides of the fire wall shall have a 1-hour fire resistance rating with 3/4 hour opening protection where opening protection is required. The fire resistance rating of the exterior wall shall extend a minimum of 4 feet (1220 mm) on each side of the intersection of the firewall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.~~

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

1. The exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with ¾ hour protection where opening protections is required by Section 704.8 The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1220 mm) on each side of the intersection of the firewall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.
2. Buildings or spaces on both sides of the intersecting firewall shall assume to have an imaginary lot line at the firewall and extending beyond the exterior of the firewall. The location of the assumed line in relation to the exterior walls and the firewall shall be such that the exterior wall and opening protection meet the requirements set forth in Section 704.5 and 704.8.

Reasons: Add flexibility to the provision. Add alternate method

The proposed language adds an alternate method to Section 705.5.1 by adding a similar application as allowed Section 704.3 by inclusion of assumed property lines for determination of exterior wall and opening protections. This application will add flexibility to the design and still meets the intent of the present code section, that is to prevent the spread of fire and smoke to the adjacent building at the fire wall. For example, a fire wall terminating at exterior walls that intersect at 90 degrees from each other, with construction type of II-B, would allow one exterior wall to have a one hour fire resistance rating without any openings for 10 ft and the other exterior wall and openings to be unprotected.

The proposed method has been an acceptable method for many years and presently is allowed per section 704.3 under similar circumstances.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS32-06/07

705.6

Proponent: Maureen Traxler, City of Seattle, representing Washington Association of Building Officials

Revise as follows:

705.6 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. ~~Buildings located above a parking garage designed in accordance with Section 509.2 shall be permitted to have the fire walls for the buildings located above the parking garage extend from the horizontal separation between the parking garage and the buildings.~~

Reason: The purpose of the proposed code change is to delete an unnecessary paragraph. Exception 5 is unnecessary because Section 509.2 clearly states that the basement or first story is treated as a separate building for the purpose of continuity of fire walls. IBC Section 509.2

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS33-06/07
705.8

Proponent: Joseph R. Hetzel, P.E., Door & Access Systems Manufacturers Association

Revise as follows:

705.8 Openings. Each opening through a fire wall shall be protected in accordance with Section 715.4 and shall not exceed ~~120~~ 156 square feet (~~11~~ 15 m²). The aggregate width of openings at any floor level shall not exceed 25 percent of the length of the wall.

Exceptions:

1. Openings are not permitted in party walls constructed in accordance with Section 705.1.1.
2. Openings shall not be limited to ~~120~~ 156 square feet (~~11~~ 15 m²) where both buildings are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

Reason: The purpose of this proposed code change is to coordinate the provisions of Section 706.6 with Section 705.8, as they relate to maximum opening size. The maximum opening size as specified in Section 706.6 was changed from 120 SF to 156 SF via ICC code change proposal FS27-04/05.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS34-06/07

705.11

Proponent: Vickie Lovell, Delray, FL, representing Air Movement and Control Association and 3M Company

Revise as follows:

705.11 Ducts and air transfer openings. Ducts and air transfer openings shall not penetrate fire walls.

Exception: Penetrations by ducts and air transfer openings of fire walls that are not on a lot line shall be allowed provided the penetrations comply with Sections ~~712 and~~ 716.5.1. The size and aggregate width of all openings shall not exceed the limitations of Section 705.8.

Reason: The protection of ducts is not a compliance option between Sections 712 and 716. The specific requirements for duct protection requirements are located in 716, not 712. Under certain conditions the code may direct the user to back to 712, or other sections of the code which permit a percentage of unprotected openings based on separation distance, but the starting point is in Section 716.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS35-06/07

706.2.1

Proponent: Kate Steel, Piedmont, CA, representing Fire & Safety Glazing Council

Revise as follows:

706.2.1 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 and complying with the requirements of Section 706, shall be permitted. Fire-resistance-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard, and the identifier "~~W-XXX,~~" where the "~~XXX~~" is the fire-resistance rating in minutes classification required in Section 715.3.3. Such label or identification shall be issued by an approved agency and shall be permanently affixed to the glazing.

Reason: The Fire & Safety Glazing Council ("FGSC") is a division of the Americas Glass Association. Members of FGSC's Steering Committee represent building code officials, consumer safety advocates, testing and listing certification agencies, glazing manufacturers and distributors, and fire-rated door and frame manufacturers.

The current labeling system of W-XXX, D-NH/H NT/T -XXX and OH-XXX for fire-rated glazing products is confusing, and unworkable. Fire-rated glazing manufacturers and distributors and fire-rated door and frame manufacturers came to FSGC and asked FGSC to assist in developing a simple system that addresses the performance differences of glazing products and frame systems that will assist the end-user in selecting the proper product for specific end uses.

FGSC solicited the input of code officials, architects, fire-rated glazing and fire-rated door and frame manufacturers, test and certification agencies, and came up with a simple system that identifies the critical differences of the two types for fire performance recognized under the International Building Code and NFPA 80—fire-**resistance** performance of building products tested to ASTM E119 (NFPA 251, UL 263) that protect against radiant heat transfer by limiting temperature rise to 250F degrees, distinct from fire-**protection** performance of products tested NFPA 252 (UL 10b) and NFPA 257 (UL 9) that remain in the opening without through openings for the designated rating period, but don't protect against radiant heat transfer.

This proposed code change coordinates with proposed addition of a new section 715.3.3, which will require classification and labeling of glazing as "R" for meeting fire-resistance and limited temperature rise criteria in accordance with ASTM E119, or "P" for fire-protection testing of fire endurance capabilities to NFPA 252 and 257. The terms "resistance " and "protection" have become terms of performance distinctions under U.S. codes and the R and P classification system would help reinforce those distinctions.

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

Analysis: As written, this code change is related to and dependent on the approval of the proponent's code change FS103-06/07 which adds a new Section 715.3. Approval of this item without approval of the other code change would require modification.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS36-06/07

706.2.1, 703.5 (New)

Proponent: William E. Koffel, P.E., Koffel Associates, Inc., representing Fire Rated Glazing Industry

1. Delete without substitution:

~~**706.2.1 Fire-resistance-rated glazing.** Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 and complying with the requirements of Section 706, shall be permitted. Fire-resistance-rated glazing shall bear a label~~

or other identification showing the name of the manufacturer, the test standard and the identifier "W-XXX," where the "XXX" is the fire resistance rating in minutes. Such label or identification shall be issued by an approved agency and shall be permanently affixed to the glazing.

2. Add new text as follow:

706.2.4 703.5 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 and complying with the requirements of Section 706, shall be permitted. Fire-resistance-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and the identifier "W-XXX," where the "XXX" is the fire-resistance rating in minutes. Such label or identification shall be issued by an approved agency and shall be permanently affixed to the glazing.

Reason: Fire resistance rated glazing may be used in fire barriers, fire partitions, and exterior wall assemblies. The current location in the Code implies that fire resistance rated glazing may only be used in fire barriers. Moving the text to Section 703 will clarify that fire resistance rated glazing may be used in assemblies other than fire barriers.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS37-06/07

402.4.6, 402.7.1, 403.2, [F]404.3, 410.5.1, 410.5.2, [F]415.6.1.2, [F]415.6.2.2, [F]415.6.3.4.1, [F]415.6.3.5.2, [F]415.7.1, [F]415.7.3, [F]415.8.2.2, 415.8.5.2.1, 415.8.5.2.2, [F]416.2, [F]418.4, [F]418.5, [F]418.6, 706.3.3, 706.3.9, Table 706.3.9, 707.11, 707.13.3, 707.13.4, 712.3, 901.7, 903.2, [F]909.11 (IMC 513.11 & IFC 909.11), 909.20.2, 909.20.6.1, [F]910.3.4, [F]910.4.4, 1021.3 (IFC [B] 1021.3), 1022.2 (IFC [B] 1022.2) 3006.4, 3104.5, 3410.6.16.1 (IEBC [B] 1301.6.16.1)

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

THIS PROPOSAL IS ON THE AGENDA OF THE IBC FIRE SAFETY, IBC GENERAL AND IBC MEANS OF EGRESS AND IFC CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

706.3.3 Exit passageway. The fire-resistance rating of the ~~separation between~~ fire barrier separating building areas ~~and from~~ an exit passageway shall comply with Section ~~4021.4~~ 1021.3.

706.3.9. Single-occupancy fire areas. The fire barriers or horizontal assembly 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.

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

1. They shall be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure;_
2. They shall terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by a fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. having a The fire-resistance rating and opening protectives shall be at least equal to the protection required for the shaft enclosure;_ ~~or.~~
3. They shall be protected by approved fire dampers installed in accordance with their listing at the lowest floor level within the shaft enclosure.

Exceptions:

1. The fire-resistance-rated room separation is not required, provided there are no openings in or penetrations of the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 717.3.1 for draftstopping, or the room shall be provided with an approved automatic fire suppression system.
2. A shaft enclosure containing a refuse chute or laundry chute shall not be used for any other purpose and shall terminate in a room protected in accordance with Section 707.13.4.

3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

707.13.3 Refuse and laundry chute access rooms. Access openings for refuse and laundry chutes shall be located in rooms or compartments enclosed by a not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both ~~that has a fire-resistance rating of not less than 1 hour~~. Openings into the access rooms shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. Doors shall be self- or automatic closing upon the detection of smoke in accordance with Section 715.4.7.3.

707.13.4 Termination room. Refuse and laundry chutes shall discharge into an enclosed room separated from the remainder of the building by a not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both ~~that has a fire-resistance rating of not less than 1 hour~~. Openings into the termination room shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. Doors shall be self- or automatic closing upon the detection of smoke in accordance with Section 715.4.7.3. Refuse chutes shall not terminate in an incinerator room. Refuse and laundry rooms that are not provided with chutes need only comply with Table 508.2.

712.3 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers walls, smoke barrier walls, and fire partitions shall comply with Sections 712.3.1 through 712.3.4.

901.7 Fire areas. Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both having a fire-resistance rating of not less than that determined in accordance with Section 706.3.9.

[B] 909.20.2 Construction. The smokeproof enclosure shall be separated from the remainder of the building by not less than a 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. ~~without~~ Openings are not permitted other than the required means of egress doors. The vestibule shall be separated from the stairway by not less than a 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The open exterior balcony shall be constructed in accordance with the fire-resistance-rating requirements for floor construction.

[B] 909.20.6.1 Ventilation systems. Smokeproof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment and ductwork shall comply with one of the following:

1. Equipment 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 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 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.

PART II – IBC GENERAL

Revise as follows:

402.4.6 Service areas fronting on exit passageways. Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into exit passageways, provided the exit passageway is separated from such rooms with not less than 1-hour ~~fire-resistance-rated~~ fire barriers and 1-hour opening protectives constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The minimum fire-protection rating of openings in the fire barriers shall be 1 hour.

402.7.1 Attached garage. An attached garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered mall building by a not less than 2-hour fire barriers having a fire-resistance rating of at least 2 hours constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

Exception: Where an open parking garage or enclosed parking garage is separated from the covered mall building or anchor building a distance greater than 10 feet (3048 mm), the provisions of Table 602 shall apply. Pedestrian walkways and tunnels which attach the open parking garage or enclosed parking garage to the covered mall building or anchor building shall be constructed in accordance with Section 3104.

410.5.1 Separation from stage. ~~Where the stage height is greater than 50 feet (15 240 mm),~~ The stage shall be separated from dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage and other parts of the building by a fire barriers ~~with not less than a 2-hour fire-resistance rating with approved opening protectives~~ constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The minimum fire-resistance rating shall be 2 hours for stage heights greater than 50 feet (15 240 mm) and 1 hour for stage heights of 50 feet (15 240 mm) or less, the required stage separation shall be a fire barrier with not less than a 1-hour fire-resistance rating with approved opening protectives.

410.5.2 Separation from each other. Dressing rooms, scene docks, property rooms, workshops, storerooms and compartments appurtenant to the stage shall be separated from each other by not less than 1-hour fire barriers with not less than a 1-hour fire-resistance rating with approved opening protectives constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

3006.4 Machine rooms and machinery spaces. Elevator machine rooms and machinery spaces shall be enclosed with fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, ~~or both with a~~ The fire-resistance rating shall not be less than the required rating of the hoistway enclosure served by the machinery. Openings in the fire barriers shall be protected with assemblies having a fire protection rating not less than that required for the hoistway enclosure doors.

3104.5 Fire barriers between pedestrian walkways and buildings. Walkways shall be separated from the interior of the building by not less than 2-hour fire barriers walls with a fire-resistance rating of not less than 2 hours constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. This protection shall extend vertically from a point 10 feet (3048 mm) above the walkway roof surface or the connected building roof line, whichever is lower, down to a point 10 feet (3048 mm) below the walkway and horizontally 10 feet (3048 mm) from each side of the pedestrian walkway. Openings within the 10-foot (3048 mm) horizontal extension of the protected walls beyond the walkway shall be equipped with devices providing a 3/4-hour fire protection rating in accordance with Section 715.

Exception: The walls separating the pedestrian walkway from a connected building are not required to have a fire-resistance rating by this section where any of the following conditions exist:

1. The distance between the connected buildings is more than 10 feet (3048 mm), the pedestrian walkway and connected buildings, except for open parking garages, are equipped throughout with an automatic sprinkler system in accordance with ~~NFPA-13~~ Section 903.3.1.1 and the wall is constructed of a tempered, wired or laminated glass wall and doors subject to the following:
 - 1.1. The glass shall be protected by an automatic sprinkler system in accordance with ~~NFPA-13~~ Section 903.3.1.1 and the sprinkler system shall completely wet the entire surface of interior sides of the glass wall when actuated.
 - 1.2. The glass shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler operates.
 - 1.3. Obstructions shall not be installed between the sprinkler heads and the glass.
2. The distance between the connected buildings is more than 10 feet (3048 mm) and both sidewalls of the pedestrian walkway are at least 50 percent open with the open area uniformly distributed to prevent the accumulation of smoke and toxic gases.
3. Buildings are on the same lot in accordance with Section 503.1.2.
4. Where exterior walls of connected buildings are required by Section 704 to have a fire-resistance rating greater than 2 hours, the walkway shall be equipped throughout with an automatic sprinkler system installed in accordance with ~~NFPA-13~~ Section 903.3.1.1.

3410.6.16.1 (IEBC [B] 1301.6.16.1) Categories. The categories for mixed occupancies are:

1. Category a — ~~Minimum 1-hour fire barriers between~~ Occupancies separated by minimum 1-hour fire barriers or minimum 1-hour horizontal assemblies, or both.
2. Category b — ~~Fire barriers~~ Separations between occupancies in accordance with Section 508.3.3.
3. Category c — ~~Fire barriers~~ Separations between occupancies having a fire-resistance rating of not less than twice that required by Section 508.3.3.

PART III – IBC MEANS OF EGRESS

1021.3 (IFC 1021.3) Construction. Exit passageway enclosures shall have walls, floors and ceilings of not less than 1-hour fire-resistance rating, and not less than that required for any connecting exit enclosure. Exit passageways shall be constructed as fire barriers in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

1022.2 (IFC 1022.2) Separation. The separation between buildings or areas of refuge connected by a horizontal exit shall be provided by a fire wall complying with Section 705; or it shall be provided by a fire barrier complying with Section 706 or a horizontal assembly complying with Section 711, or both. ~~and having a~~. The minimum fire-resistance rating of ~~not less than~~ the separation shall be 2 hours. Opening protectives in horizontal exit walls shall also comply with Section 715. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire resistance rating of not less than 2 hours with no unprotected openings.

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

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

PART IV – IFC

Revise as follows:

[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.
2. Telecommunications 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 not less than 1-hour fire barriers consisting of not less than 1-hour fire-resistance-rated walls and constructed in accordance with Section 706 or not less than 2-hour fire-resistance-rated floor/ceiling horizontal assemblies constructed in accordance with Section 711, or both.

[F] 404.3 Automatic sprinkler protection. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered provided that portion of the building is separated from the atrium portion by not less than a 2-hour ~~fire-resistance-rated~~ fire barriers constructed in accordance with Section 706 or horizontal assembly assemblies constructed in accordance with Section 711, or both.
2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.

[F] 415.6.1.2 Grinding rooms. Every room or space occupied for grinding or other operations that produce combustible dusts shall be enclosed with fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. ~~that have not less than a 2-hour~~ The minimum fire-resistance rating shall be 2-hours where the area is not more than 3,000 square feet (279 m²), and ~~not less than a 4-hour fire-resistance rating~~ 4 hours where the area is greater than 3,000 square feet (279 m²).

[F] 415.6.2.2 Tank protection. Storage tanks shall be noncombustible and protected from physical damage. A Fire barriers wall or horizontal assemblies or both around the storage tank(s) shall be permitted as the method of protection from physical damage.

[F] 415.6.3.4.1 Fire separation. ~~Separation of the Attached structures shall be provided~~ separated from the building by fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. ~~having a~~ The minimum fire-resistance rating of ~~not less than~~ shall be 1 hour and the fire barriers

shall not have openings. ~~Fire barriers between attached structures occupied only for the storage of LP-gas are permitted to have fire door assemblies that comply with Section 715.~~ Such fire barriers and horizontal assemblies shall be designed to withstand a static pressure of at least 100 pounds per square foot (psf) (4788 Pa), except where the building to which the structure is attached is occupied by operations or processes having a similar hazard.

Exception: Fire barriers between attached structures occupied only for the storage of LP-gas are permitted to have fire door assemblies complying with Section 715.

~~**[F] 415.6.3.5.2 Common construction.** Walls and floor/ceiling assemblies common to the room and to the building within which the room is located shall be fire barriers with not less than a 1-hour fire-resistance rating and without openings. Common walls for rooms occupied only for storage of LP-gas are permitted to have opening protectives complying with Section 715. The walls and ceilings shall be designed to withstand a static pressure of at least 100 psf (4788 Pa).~~

~~**Exception:** Where the building, within which the room is located, is occupied by operations or processes having a similar hazard.~~

[F] 415.6.3.5.2 Fire separation. The rooms shall be separated from the building by fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The minimum fire-resistance rating shall be 1 hour and the fire barriers shall not have openings. Such fire barriers and horizontal assemblies shall be designed to withstand a static pressure of at least 100 pounds per square foot (4788 Pa), except where the building, within which the room is located, is occupied by operations or processes having a similar hazard.

Exception: Fire barriers between common walls occupied only for the storage of LP-gas are permitted to have opening protectives complying with Section 715.

[F] 415.7.1 Gas rooms. When gas rooms are provided, such rooms shall be separated from other areas by not less than a 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 415.7.3 Separation - highly toxic solids and liquids. Highly toxic solids and liquids not stored in approved hazardous materials storage cabinets shall be isolated from other hazardous materials storage by a not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both having a fire-resistance rating of not less than 1 hour.

[F] 415.8.2.2 Separation. Fabrication areas, whose sizes are limited by the quantity of hazardous materials allowed by Table 415.8.2.1.1, shall be separated from each other, from corridors, and from other parts of the building by not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. Doors within such fire barrier walls, including doors to corridors, shall be only self-closing fire door assemblies having a fire-protection rating of not less than 3/4 hour.
2. Windows between fabrication areas and corridors are permitted to be fixed glazing listed and labeled for a fire protection rating of at least 3/4 hour in accordance with Section 715.

[F] 415.8.5.2.1 HPM rooms and gas rooms. HPM rooms and gas rooms shall be separated from other areas by ~~not less than a 2-hour~~ fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The minimum fire-resistance rating shall be 2-hours where the area is 300 square feet (27.9 m²) or more and not less than a 1-hour fire barrier 1 hour where the area is less than 300 square feet (27.9 m²).

[F] 415.8.5.2.2 Liquid storage rooms. Liquid storage rooms shall be constructed in accordance with the following requirements:

1. Rooms in excess of 500 square feet (46.5 m²) shall have at least one exterior door approved for fire department access.
2. Rooms shall be separated from other areas by fire barriers ~~having a~~ constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating of shall be not less than 1-hour for rooms up to 150 square feet (13.9 m²) in area and not less than 2 hours where the room is more than 150 square feet (13.9 m²) in area.

3. Shelving, racks and wainscoting in such areas shall be of noncombustible construction or wood of not less than 1/2 inch (12.5 mm) nominal thickness.
4. Rooms used for the storage of Class I flammable liquids shall not be located in a basement.

[F] 416.2 Spray rooms. Spray rooms shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both ~~with not less than a 1-hour fire resistance rating~~. Floors shall be waterproofed and drained in an approved manner.

[F] 418.4 Tank storage. Storage areas for flammable and combustible liquid tanks inside of structures shall be located at or above grade and shall be separated from the processing area 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.

[F] 418.5 Nitrocellulose storage. Nitrocellulose storage shall be located on a detached pad or in a separate structure or a room enclosed with no less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 418.6 Finished products. Storage rooms for finished products that are flammable or combustible liquids shall be separated from the processing area by not less than 2-hour fire barriers having a fire resistance rating of at least 2 hours, and openings in the walls shall be protected with approved opening protectives constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 420.4 Design and construction. Hydrogen cutoff rooms shall be classified with respect to occupancy in accordance with Section 302.1 and separated from other areas of the building by not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both; or as required by Section 508.2 or 508.3 as applicable.

[F] 420.4.1 Opening protectives. Doors within ~~such~~ the fire barriers walls, including doors to corridors, shall be self-closing in accordance with Section 715. Interior door openings shall be electronically interlocked to prevent operation of the hydrogen system when doors are opened or ajar or the room shall be provided with a mechanical exhaust ventilation system designed in accordance with Section 420.4.1.1.

[F] 903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in this section.

Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic fire alarm system and are separated from the remainder of the building by not less than 1 hour fire barriers consisting of not less than 1-hour fire resistance-rated walls and constructed in accordance with Section 706 or not less than 2-hour fire resistance-rated floor/ceiling horizontal assemblies constructed in accordance with Section 711, or both.

[F] 909.11 (IMC [F] 513.11, IFC 909.11) Power systems. The smoke control system shall be supplied with two sources of power. Primary power shall be the normal building power systems. Secondary power shall be from an approved standby source complying with the ICC *Electrical Code*. The standby power source and its transfer switches shall be in a separate room separate from the normal power transformers and switch gear and ventilated directly to and from the exterior. ~~The room shall be enclosed in a room constructed of with~~ not less than 1-hour fire barriers ventilated directly to and from the exterior constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Power distribution from the two sources shall be by independent routes. Transfer to full standby power shall be automatic and within 60 seconds of failure of the primary power. The systems shall comply with this code or the ICC *Electrical Code*.

[F] 910.3.4 Vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from adjacent lot lines and fire walls and 10 feet (3048 mm) or more from fire barriers walls. Vents shall be uniformly located within the roof area above high-piled storage areas, with consideration given to roof pitch, draft curtain location, sprinkler location and structural members.

[F] 910.4.4 Wiring and control. Wiring for operation and control of smoke exhaust fans shall be connected ahead of the main disconnect and protected against exposure to temperatures in excess of 1,000°F (538°C) for a period of not less than 15 minutes. Controls shall be located so as to be immediately accessible to the fire service from the exterior of the building and protected against interior fire exposure by not less than 1-hour fire barriers having a fire resistance rating not less than 1-hour constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

Reason: Code change proposal FS2-04/05 (AMPC1) changed the concept of a fire barrier from being a fire containment assembly to begin a component of a fire containment assembly. This was accomplished by changing the definition of fire barrier from begin a vertical or horizontal assembly to being a wall assembly and by deleting the provisions for horizontal fire barriers. The proposal made the necessary revisions to several

sections of the IBC for consistency with the change in concept (i.e., Sections 403.10.1, 404.5, 414.2.1, 508.2.2.1, 508.3.3.4.1, 706.3.5, 706.3.7, 706.3.9, 707.5, 911.1 and 1020.1). The proposal, however, did not make the necessary revisions to other sections of the IBC, which are needed in order for the concept to be fully incorporated into the provisions of the IBC. The purpose of this proposal is to make the necessary revisions to the provisions in those code sections.

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

PART I – IBC FIRE SAFETY

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART II – IBC GENERAL

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART III – IBC MEANS OF EGRESS

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART IV – IFC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS38–06/07

706.3.10 (New), 706.3.11 (New)

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

Add new text as follows:

706.3.10 Refuse and laundry chute access rooms. The fire resistance rating of the fire barrier or horizontal assembly separating building areas from refuse and laundry chute access rooms shall comply with Section 707.13.3.

706.3.11 Termination rooms. The fire resistance rating of the fire barrier or horizontal assembly separating building areas from refuse and laundry chute termination rooms shall comply with Section 707.13.4.

Reason: The purpose of this proposal is to include the fire barriers required to separate refuse and laundry chute access and termination rooms in the same manner as other fire barriers required elsewhere in the code. This proposal does not change the requirements of the code, but rather coordinates it. This proposal should be considered in conjunction w/ my proposal to revise Sections 707.13.3 & 707.13.4 (FS50-06/07) since the two complement each other and passage of one and not the other would be illogical.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS39–06/07

706.3, 706.3.1, 706.3.2, 706.3.3, 706.3.4, 706.3.5, 706.3.6, 706.3.7, 706.3.8, 706.3.9, Table 706.3.9

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

Revise as follows:

706.3 Fire-resistance rating. The required fire-resistance rating of fire barriers shall comply with this section be as specified by other sections of this code or the *International Fire Code*.

706.3.1 Shaft enclosures. The fire-resistance rating of the fire barrier separating building areas from a shaft shall comply with Section 707.4.

706.3.2 Exit enclosures. ~~The fire-resistance rating of the fire barrier separating building areas from an exit shall comply with Section 1020.1.~~

706.3.3 Exit passageway. ~~The fire-resistance rating of the separation between building areas and an exit passageway shall comply with Section 1021.1.~~

~~706.3.4 Horizontal exit.~~ The fire-resistance rating of the separation between building areas connected by a horizontal exit shall comply with Section 1022.1.

~~706.3.5 Atriums.~~ The fire-resistance rating of the fire barrier separating atriums shall comply with Section 404.5.

~~706.3.6 Incidental use areas.~~ The fire barrier separating incidental use areas shall have a fire-resistance rating of not less than that indicated in Table 508.2.

~~706.3.7 Control areas.~~ Fire barriers separating control areas shall have a fire-resistance rating of not less than that required in Section 414.2.3.

~~706.3.8 Separation of mixed occupancies.~~ Where the provisions of Section 508.3.2 are applicable, the fire barrier separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Section 508.3.2 based on the occupancies being separated.

706.3.9.1. Single occupancy fire areas. The fire barrier or horizontal assembly, or both, separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 706.3.9.1.

**TABLE 706.3.9.1
FIRE-RESISTANCE RATING REQUIREMENTS FOR
FIRE BARRIER ASSEMBLIES BETWEEN FIRE AREAS**

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

Reason: Code change proposal FS2-04/05 (AMPC1) changed the concept of a fire barrier from being a fire containment assembly to begin a component of a fire containment assembly. This was accomplished by changing the definition of fire barrier from begin a vertical or horizontal assembly to being a wall assembly and by deleting the provisions for horizontal fire barriers. Consequently, a fire barrier does not necessarily provide a separation. In order for there to be a fire containment separation or enclosure, one or more fire barriers or one or more horizontal assemblies are needed, and a combination of fire barriers and horizontal assemblies may also be needed. Thus, the references in Sections 706.3.1 through 706.3.8 to fire barriers separating buildings and other areas are technically incorrect.

Section 706.3 states that the fire-resistance rating of fire barriers shall comply with this section (i.e., Sections 706.3.1 through 706.3.9). This implies that the required fire-resistance ratings for fire barriers are specified in Section 706.3. This is also technically incorrect because the IBC and IFC contain numerous requirements for fire-resistance ratings of fire barriers that are not specified in Sections 706.3.1 through 706.3.9. Sections 706.3.1 through 706.3.8 serve little purpose other than to reference other code sections where some of the required fire-resistance ratings are currently specified. Consequently, the references are superfluous. The one exception to this is Section 706.3.9, which provides technical provisions for fire barriers and horizontal assemblies between fire areas. The charging language for the technical provisions is found in Section 901.7.

Rather than eliminate the references to separations in Sections 706.3.1 through 706.3.8 and add approximately 40 additional sections after Section 706.3.9 referencing the required fire-resistance ratings for fire barriers elsewhere in the IBC and IFC, this proposal deletes Sections 706.3.1 through 706.3.8. A list of the provisions for fire barriers in the 2003 IBC and IFC can be found in the reason statement for code change proposal FS40-03/04.

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

Analysis: Copies of and information about code changes from previous code change cycles can be obtained at <http://www.iccsafe.org/cs/codes>.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS40-06/07

508.2.2.1, 706.5

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

THIS PROPOSAL IS ON THE AGENDA OF THE IBC GENERAL AND THE IBC FIRE SAFETY CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise as follows:

706.5 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 fire barriers shall be protected to afford the required fire-resistance rating of the fire barrier supported, except for 1-

hour fire-resistance-rated incidental use area separations as 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.

PART II – IBC GENERAL

Revise as follows:

508.2.2.1 Construction. Where Table 508.2 requires a fire-resistance-rated separation, the incidental use area shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 706 or a horizontal assembly constructed in accordance with Section 711, or both. Where Table 508.2 permits an automatic fire-extinguishing system without a fire barrier, the incidental use area shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The partitions shall extend from top of the foundation or the floor/ceiling assembly below to the underside of the fire-resistance-rated floor/ceiling assembly above or fire-resistance-rated roof/ceiling assembly above or to the underside of the floor or roof sheathing, ~~or sub deck or slab~~ above. Doors shall be self- or automatic closing upon detection of smoke in accordance with Section 715.3.7.3. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.

Reason: The purpose of this proposal is to restore the revisions approved by code change proposals FS19-03/04(AM) and FS26-04/05(AS) and for consistency with Sections 705.6 (Exceptions 2 and 3), 705.6.1 (Exception), 707.12, 708.4, 709.4 and 710.4. They were inadvertently eliminated by code change proposals G14-04/05(AMPC1) and FS2-04/05(AMPC1).

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

Analysis: Copies of and information about code changes from previous code change cycles can be obtained at <http://www.iccsafe.org/cs/codes>.

PART I – IBC FIRE SAFETY

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC GENERAL

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

FS41–06/07

706.5, 706.5.1 (New), 706.5.2 (New)

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

Revise as follows:

706.5 Continuity. Fire barriers shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof 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 fire barriers shall be protected to afford the required fire-resistance rating of the fire barrier supported, except for 1-hour fire-resistance-rated incidental use area separations as 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 fire barrier walls shall be protected to afford the required fire-resistance rating of the fire barrier supported, except for 1-hour fire-resistance-rated incidental use area separations as required by Table 508.2 in buildings of Type IIB, IIBB 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.

706.5.2 Fire Barrier and Floor/Ceiling Assembly Intersection. Gaps or voids created at the intersection of fire barrier walls and the underside of the floor or roof slab or deck above, 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 fire barrier wall in which it is installed. These fire-resistant joint systems shall be tested in accordance with Section 713.3.

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 to have a fire resistance rating equal to that of the wall assembly. This code change proposal does not change any of the existing Code requirements.

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.

This proposed changes 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: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS42-06/07

706.7

Proponent: Sarah A. Rice, C.B.O., Schirmer Engineering Corp.

Revise as follows:

706.7 Openings. Openings in a fire barrier wall 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 (15m²). 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 fire 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 F fire doors 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 and has a minimum fire-resistance rating not less than the fire-resistance rating of the wall.
4. Fire windows permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of length of the wall.

Reason: Without the proposed language the code literally exempts fire doors in exit enclosures from all the requirements of Section 706.7, which would include the requirement in the first that requires “Openings in a fire barrier wall shall be protected in accordance with Section 715.” and the last sentence which requires “Openings in exit enclosures and exit passageways shall also comply with Sections 1020.1.1 and 1021.4, respectively.”

The proposed language makes it clear that Exception 2 is intended only to allow the omission of the size limitations.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS43-06/07

706.7, 712.3.1.1 (IMC 607.5.4), 2603.8

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

Revise as follows:

706.7 Openings. Openings in a fire barrier wall 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 (15m²). 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 fire areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Fire doors 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 and has a minimum fire-resistance rating not less than the fire-resistance rating of the wall.
4. Fire windows ~~assemblies~~ permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of length of the wall.

716.5.4 (IMC 607.5.4) 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.
2. Tenant partitions in covered mall buildings where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof ~~sheathing, slab or~~ deck above.
3. The duct system is constructed of approved materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
 - 3.1. The duct shall not exceed 100 square inches (0.06 m²).
 - 3.2. The duct shall be constructed of steel a minimum of 0.0217 inch (0.55 mm) in thickness.
 - 3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
 - 3.4. The duct shall be installed above a ceiling.
 - 3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
 - 3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 1/2-inch by 1 1/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.

2603.8 Protection against termites. In areas where the probability of termite infestation is very heavy in accordance with Figure 2603.8, extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be at least 6 inches (152 mm).

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or ~~preservatively~~ preservative-treated wood.
2. An approved method of protecting the foam plastic and structure from subterranean termite damage is provided.
3. On the interior side of basement walls.

Reason:

1. 706.7: Consistency with Section 715.4.
2. 716.5.4: Consistency with code change proposal FS19-03/04 (AM).
3. 2603.8: Consistency with current definition in Section 2302.1.

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

FS44-06/07

706.10 (New)

Proponent: Rick Thornberry, P.E., The Code Consortium, Inc., representing W.R. Grace

Add new text as follows:

706.10 Structural member penetrations. Structural members that penetrate a fire barrier shall be individually protected on all sides for the full length with materials having a fire-resistance rating not less than that required for the fire barrier. The supports for such structural members shall also be protected to provide a fire-resistance rating not less than that of the structural member being supported.

Reason: The code is not clear as to how to treat structural members that penetrate a fire barrier where the fire barrier is always required to have a minimum fire-resistance rating of 1-hour and conceivably as much as 4-hours. Obviously, an unprotected structural steel member penetrating a 4-hour fire barrier wall is a potential problem that could result in a breach of the fire barrier wall during a fire exposure involving the structural member. This code change proposal attempts to address this problem by requiring that structural members penetrating fire barrier walls be individually protected as required by Section 714.2.1 to provide at least the same degree of fire-resistance as that of the fire barrier wall being penetrated. In order to enhance structural integrity to minimize any potential for the penetrating structural member to cause a breach of the fire barrier wall, it is also proposed to protect the structural supports that support the structural member penetrating the fire barrier wall to the same degree as the rating of the fire barrier wall and the structural member that is penetrating the fire barrier wall.

Ideally, the appropriate design approach would be to avoid penetrating fire barrier walls with unprotected structural members. However, in some cases that is unavoidable for various reasons. In those cases, we believe it is very important that such structural members have adequate fire-resistive protection so that during a significant fire exposure, they will not cause premature failure of the fire barrier wall they penetrate. We believe this code change will provide the level of protection necessary for penetrating structural elements of fire barrier walls so that the fire barrier walls will perform as intended during a building fire exposure.

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

FS45-06/07

707.2

Proponent: Vickie Lovell, representing Air Movement and Control Association

Revise as follows:

707.2 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 air ducts protected in accordance with Section 712.4 716.5. Grease ducts and other hazardous exhaust 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.

Reason: The IBC and IMC were clarified last cycle as to the requirements for hazardous ducts. This revision is intended to direct the user to the correct code for protection of specific type of ducts.

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

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

FS46-06/07

707.2, 712.1.1 712.3.3, 716.1.1 (IMC 607.1.1) and 716.1.1.1 (New), (IMC 607.1.1.1) (New)

Proponent: Vickie Lovell, Delray, FL, representing Air Movement and Control Association

Revise as follows:

707.2 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 air ducts protected in accordance with Section 712.4 716.5. Grease ducts and other hazardous exhaust 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.

712.3.3 712.1.1 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts that are not protected with dampers shall comply with Sections 712.2 through 712.3.4 4. Penetrations of horizontal assemblies not protected with a shaft as permitted by Exception #4 of Section 707, and are not required to be protected with fire dampers by other sections of the code, shall comply with Sections 712.4 through 712.4.4. Ducts and air transfer openings that are protected with dampers shall comply with Section 716.

716.1.1 (IMC 607.1.1) Ducts that penetrate fire resistance rated assemblies without dampers. Ducts that penetrate fire-resistance-rated assemblies and are not required by this section to have dampers shall comply with the requirements of Sections 712.2 through 712.3.4. Ducts that penetrate horizontal assemblies not required to be contained within a shaft and are not required by this section to have dampers shall comply with the requirements of Sections 712.4 through 712.4.4

716.1.1.1 (IMC 607.1.1.1) Ducts that penetrate non-fire resistance rated assemblies The space around a duct penetrating a non-fire resistance rated wall assembly shall be filled with an approved material to limit the free passage of smoke. The space around a duct penetrating a non-fire resistance rated floor assembly shall comply with 716.6.3.

Reason: The incorrect correlation between sections 707, 712 and 716 has lead to mis-interpretation of the requirements for fire dampers by code users.

Fire dampers and through penetration firestops are not equivalent alternatives for one another. However, either could be considered an alternative to a shaft enclosure, under specific, appropriate conditions. The 2006 Edition of the IBC outlines the minimum requirements as to when fire dampers are required, and specific conditions as to when dampers can be omitted due to other provisions in the code. But the code also states that when ducts are not enclosed in a shaft, and are permitted to penetrate a fire resistance rated assembly without fire dampers, the assembly still must be protected with through penetration protection. Unfortunately, due to the way the code is currently formatted, that is not clearly laid out.

The current hierarchy of code sections in the 2006 IBC that applies to ducts is as follows:

1. Section 707 - Shafts are acceptable, traditional protection for duct penetrations through floor assemblies.
2. Exception 4 of Section 707 permits alternate protection of ducts and directs the user to 712.4 for the protection of penetrations
3. Section 712.4 .1.3 directs the user to Section 716 specifically for protection of ducts and air transfer openings.

The correct and more user friendly hierarchy of code sections that applies to ducts in floor assemblies should be as follows:

Section 707 - Shafts are acceptable, traditional protection for duct penetrations through floor assemblies.

Exception 4 of Section 707 permits alternate protection of ducts other than shafts and should send the user directly to Section 716, "Ducts and Air Transfer Openings", where the protection requirements specifically for ducts are located, or to the Mechanical Code for protection for exhaust ducts.

Where Section 716 (or some other section of the code) does not require a fire damper in the duct, then the section should send the user to 712.4 for protection requirements of the duct.

We believe that these code change proposals help the code user to more quickly find the correct method of protection for ducts.

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

Public Hearing: Committee: AS AM D
 Assembly: ASF AMF DF

FS47-06/07

707.2

Proponent: Sarah A. Rice, C.B.O., Schirmer Engineering Corp., representing American Hotel & Lodging Association (AH&LA)

Revise as follows:

707.2 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~~ an exit enclosure, 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.

Reason: Section 707.2 contains 13 exceptions for when floor openings do not have to be enclosed in a shaft. Exception 7 specifically allows floor openings that meet the criteria outlined in 7.1 through 7.7 to not have to be enclosed in a shaft. Among the criteria is Exception 7.2 which reads "7.2 Is not part of the required means of egress system, except as permitted in Section 1020.1."

Using the term "means of egress" is incorrect and makes no sense, as by definition a means of egress is composed of 3 components; exit access, exit and exit discharge. If the floor opening cannot contain any part of the "required" means of egress system then it can't contain any of the exit access, exit or exit discharge for the building occupants – or in other words, circulation of occupants could never occur in that space as all spaces within a building are (with the exception of maybe small closets) either exit access, exit and exit discharge.

We feel that Exception 7.2 should read "7.2. Is not part of an exit enclosure, except as permitted in Section 1020.1."

The reference to Section 1020.1 within Exception 7.2 confirms the intent of this proposal is accurate. Section 1020 is Vertical Exit Enclosures, and more specifically Section 1020.1 contains exceptions for the enclosure requirements for vertical exits. Why reference those exceptions, if the portion of the means of egress that is being addressed in the sentence is not an "exit?"

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS48-06/07

707.2

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

Revise as follows:

707.2 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 therefrom.
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. A shaft enclosure is not required for floor openings for elevators within a single use open parking garage.

Reason: Adding this language will clarify that a fire rated shaft enclosure would not be required for an elevator when located within a single use open parking garage. Section 707.2 exception 8 allows the ramps within open parking garages to not meet the shaft requirements. Section 1020.1 exception 5 allows stairways serving only the parking structure to be unenclosed and not meet the shaft requirements. This new language will clarify that the elevator floor penetration would also not require shaft protection.

Cost Impact: The code change proposal will not increase the cost of construction. This would result in a cost reduction.

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS49-06/07

707.5

Proponent: John Valiulis, Hilti, Inc.

Revise as follows:

707.5 Continuity. Shaft enclosures shall be constructed as fire barriers in accordance with Section 706 ~~or horizontal assemblies constructed in accordance with Section 711, or both,~~ and shall have continuity in accordance with Section 706.5 for fire barriers ~~or Section 711.4 for horizontal assemblies as applicable.~~

Reason: To reduce confusion in the application of the code, by correcting an apparently inadvertent error in section 707.5 that slipped into the 2006 IBC as part of multiple, sweeping changes that were a result of code change proposal FS2-04/05.

In the 2006 IBC, numerous code sections, including section 707.5, were modified to replace the word "fire barrier" with "fire barrier or horizontal assembly or both", since a distinction was drawn that fire barriers will no longer include horizontal assemblies. In most cases, that change made sense. However, that change should not have been made in section 707.5, which deals with shafts. Shafts are enclosures that are used as one of the allowable ways to protect the opening in a floor/ceiling assembly or roof/ceiling assembly. As such, a shaft will never be a horizontal assembly. It will always be vertical. Therefore, the statement in the 2006 IBC that a shaft can be constructed as either a fire barrier or horizontal assembly can only lead to confusion. It is therefore proposed that the non-realistic "option" of construction a shaft as a horizontal assembly be deleted from section 707.5.

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

Public Hearing: Committee:	AS	AM	D
Assembly:	ASF	AMF	DF

FS50-06/07

707.13.3, 707.13.4

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

Revise as follows:

707.13.3 Refuse and laundry chute access rooms. Access openings for refuse and laundry chutes shall be located in rooms or compartments enclosed by a fire barrier that has a fire-resistance rating of not less than 1 hour. Openings into the access rooms shall be protected ~~by opening protectives having a fire protection rating of not less than ¾ hour~~ in accordance with Table 715.4. Doors shall be self-closing or automatic closing upon the detection of smoke in accordance with Section 715.4.7.3.

707.13.4 Termination room. Refuse and laundry chutes shall discharge into an enclosed room separated from the remainder of the building by a fire barrier that has a fire-resistance rating of not less than 1 hour. Openings into the termination room shall be protected ~~by opening protectives having a fire protection rating of not less than ¾ hour~~ in accordance with Table 715.4. Doors shall be self-closing or automatic closing upon the detection of smoke in accordance with Section 715.4.7.3. Refuse chutes shall not terminate in an incinerator room. Refuse and laundry rooms that are not provided with chutes need only comply with Table 508.2.

Reason: The purpose of this proposal is to remove unnecessary redundancies in the code and to properly direct the user of the code to a central location to find the rating required for the opening protectives in Table 715.4. Since these sections were changed in the last code change cycle to clarify that the walls are to be fire barriers, it is appropriate to direct the user to Table 715.4 to determine the proper opening protective. Adding the word "closing" in the last sentence merely completes the term and clarifies the intent of the code. The proposed text does not change the requirements of the code, but rather strives for consistency in the method of conveying similar information. This proposal should be considered in conjunction w/ my proposal to add new Sections 706.3.10 & 706.3.11 (FS38-06/07) since the two complement each other and passage of one and not the other would be illogical.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS51-06/07

707.14.1

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

Revise as follows:

707.14.1 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. Where other provisions of the Code do not require corridors to be fire-resistive, elevator lobbies shall be constructed as smoke partitions in accordance with Section 710, to provide an effective barrier to limit the transfer of smoke. 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-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: Lobbies served by corridors not required to be fire-resistance rated should meet the requirements for smoke partitions.

Several High-rise occupancies will not require fire-resistance rated corridors. Section 1017.1 and Table 1017.1 also have conditions that do not require corridors to have a fire-resistance rating.

The primary reason for lobby enclosures is to limit or prevent vertical smoke spread through elevator shafts. Lobby enclosures, which do not have a fire-resistance rating due to sprinklers or other considerations in the Code, should provide a barrier to limit the spread of smoke. Historically elevator shafts have provided an avenue for smoke spread in building fires resulting in loss of life. Lobby protection in accordance with Section 710 is therefore appropriate for lobbies.

Under the IBC many lobbies will open into non-rated corridors.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

FS52-06/07

707.14.1

Proponent: Bill Ziegert, Smoke Guard, division of RectorSeal

Revise as follows:

707.14.1 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.