~~**TABLE 715.5.3**~~
~~**LIMITING SIZES OF WIRED GLASS PANELS**~~

~~OPENING FIRE PROTECTION RATING~~	~~MAXIMUM AREA (SQUARE INCHES)~~	~~MAXIMUM HEIGHT (INCHES)~~	~~MAXIMUM WIDTH (INCHES)~~
~~3 hours~~	~~0~~	~~0~~	~~0~~
~~1-1/2 hour doors in exterior walls~~	~~0~~	~~0~~	~~0~~
~~1 and 1-1/2 hours~~	~~100~~	~~33~~	~~10~~
~~3/4 hour~~	~~1,296~~	~~54~~	~~54~~
~~20 minutes~~	~~Not limited~~	~~Not limited~~	~~Not limited~~
~~Fire window Assemblies~~	~~1,296~~	~~54~~	~~54~~

~~For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm^2.~~

3. Revise as follows:

715.5.4 ~~Nonwired glass~~ Size limitations. Fire-protection-rated glazing used in fire windows ~~other than wired glass in fire window assemblies shall be fire-protection-rated glazing installed in accordance with and~~ comply~~ing~~ with the size limitations set forth in NFPA 80.

Reason: Clarify the reference to traditional wired glass as fire protection-rated glazing. Traditional wired glass should be designated as fire protection-rated glazing to be consistent with how other types of glazing products are described.

Traditional wired glass is fire-protection-rated glazing and should be referenced in the code as such. This would be in sync with how NFPA 80 describes this type of product. NFPA 80 does not contain specific requirements for any specific type of glazing material. This proposal does not eliminate the use of traditional wired glass from the code. This proposal is intended to include traditional wired glass under the designation of fire-protection-rated glazing with all the other types of glazing materials currently available today. Traditional wired glass is suitable for use in fire windows and transoms of fire door assemblies located in non-hazardous locations. There is listed and labeled safety wired glass for use in hazardous locations complying with Chapter 24.

During the last code cycle, the committee agreed with the proposal to delete the specific reference to traditional wired glass in fire doors based on the following:

- The code should not be product specific and should address the required performance.
- Traditional wired glass is no longer permitted as a safety glazing in hazardous locations. Therefore Section 715.4.6.1 should not include traditional wired glass since it may not be used in the doors which are considered as a hazardous location.

These changes in the fire window section 715.5 will also improve the code by eliminating the possible misuse of traditional wired glass in hazardous locations specified in Section 2406 of Chapter 24 simply because this specific type of fire protection-rated glazing is specified in the code without clarification that it is for use in non hazardous locations only.

The previous committee reason for not approving the deletion of traditional wired glass in fire windows and making a modification to leave traditional wired glass in fire windows was as follows:

"The modification recognizes that the code has historically accepted wired-glass in a steel frame as equivalent to a 3/4hour assembly. The deletion of this section and table would require a listed frame which would increase the cost of construction without justification supporting such a change. The listing of wired-glass assemblies use the steel frames specified in this section during their testing. These prescriptive steel frame products have worked well historically and the option of using this should remain in the code."

The use of non labeled steel frames should be removed for the following considerations.

1. The code should not be prescriptive but should be performance based.
2. The code is not in sync with NFPA 80 which requires listed and labeled frames. NFPA 80 does not reference the use of non-labeled and non-listed steel frames.
3. The reference to the non-listed and non-labeled frames places additional burden on AHJ's to determine compliance with the prescriptive code requirements.

The vast majority of fire window frames today are listed and labeled and this proposal does not increase the cost of construction.

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

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

FS132–07/08
Table 715.5

Proponent: John Berry, Cole + Russell, Inc.

Revise table as follows:

TABLE 715.5 (Supp)
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY		REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:	Fire walls	All	NP[a]
	Fire barriers	>1 1	NP[a] 3/4
	Smoke barriers	1	3/4
	Fire partitions	1 ½	3/4[b] 1/3
Exterior walls		>1 1	1 ½ 3/4
Party wall		All	NP

NP = Not Permitted.

a. Not permitted except as specified in Section 715.2.

b. Fire windows in corridor walls with a fire resistance rating of 1 hour shall have a minimum 1/3 hour assembly rating.

Reason: This proposal accomplishes the same intent as my proposal to add exception #3 to Section 715.5. The two proposals should be considered together by approving one and denying the other.

Per Table 715.4 fire door and shutter assemblies are allowed to be 1/3 hour rated in one-hour rated corridor walls.. It only makes sense that if fire doors can be 1/3 hour rated in a one-hour rated wall, then fire windows should also be allowed to be 1/3 hour rated in that same wall. Approving this change will coordinate this table with Table 715.4.

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

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

FS133–07/08
Table 715.5

Proponent: William F. O'Keeffe, SAFTIFIRST

Revise table as follows:

TABLE 715.5 (Supp)
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY		REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:	Fire walls	All	NP[a]
	Fire barriers	>1 1	NP[a] ¾
	Smoke barriers	1	¾
	Fire partitions	1 ½	¾ 1/3
Exterior walls		~~>1~~ 1	~~1 ½~~ ¾
Party wall		All	NP

NP = Not Permitted.

a. Not permitted except as specified in Section 715.2.

Reason: Clarify the code. A fire window assembly with fire protection-rated glazing is rated 3/4 hour. Glazing material rated 1 hour or more needs to be fire resistance-rated glazing to provide the required temperature rise protection.

1. In the third column of the table, the word "minimum" has been deleted to clarify the intent that a fire window assembly with fire protection-rated glazing is 3/4 hour. With the word "minimum" as stated, a fire window assembly using fire protection-rated glazing could be rated up to 3 hours without providing any temperature rise protection. This could lead to the use of fire protection-rated glazing with no radiant heat protection in applications where fire resistance-rated glazing should be used. Historically, fire protection-rated glazing has been listed up to 3/4 hour. Fire resistance-rated glazing has been listed above 3/4 hour. This provided a clear separation of use between fire protection-rated and fire resistance-rated glazing based on the fire rating duration. The listing of fire protection-rated glazing in excess of 1 hour and possibly up to 3 hours will increase the opportunity for its' misuse in building construction where fire resistance-rated glazing with radiant heat protection should be used. Authorities Having Jurisdiction may not be able to determine if glazing is fire protection-rated or fire resistance-rated by looking at the glazing. Having a distinction based on the fire rating duration will help AHJ's determine the appropriate type of glazing is being used in a fire rated assembly.
2. The fire window assembly rating of 1-1/2 hours is not consistent with intent that a fire window assembly using fire protection-rated glazing is 3/4 hour. An exterior wall with a fire resistance rating of 1 hour or greater specifying a fire window assembly of 1-1/2 hour should be deleted from this table since a fire window assembly is 3/4 hour.

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

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

FS134–07/08
Table 715.5

Proponent: William F. O'Keeffe, SAFTIFIRST

Revise table as follows:

TABLE 715.5
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY		REQUIRED ASSEMBLY RATING (hours)	~~MINIMUM~~ FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:	Fire walls	All	NP[a]
	Fire barriers	~~>1~~ 1	NP[a] 3/4
	Smoke barriers	1	3/4[b]
	Fire partitions	1 ½	3/4[b] 1/3
Exterior walls		~~>1~~ 1	~~1 ½~~ 3/4[c]
Party wall		All	NP

NP = Not Permitted.

a. Not permitted except as specified in Section 715.2.
b. See area limitations in Section 715.5.7.2
c. See area limitations in Table 704.8

Reason: To clarify the code. A fire window assembly with fire protection-rated glazing is rated 3/4 hour. Glazing material rated 1 hour or more needs to be fire resistance-rated glazing to provide the required temperature rise protection.

1. In the third column of the table, the word "minimum" has been deleted to clarify the intent that a fire window assembly with fire protection-rated glazing is 3/4 hour. With the word "minimum" as stated, a fire window assembly using fire protection-rated glazing could be rated up to 3 hours without providing any temperature rise protection. This could lead to the use of fire protection-rated glazing with no radiant heat protection in applications where fire resistance-rated glazing should be used. Historically, fire protection-rated glazing has been listed up to 3/4 hour. Fire resistance-rated glazing has been listed above 3/4 hour. This provided a clear separation of use between fire protection-rated and fire resistance-rated glazing based on the fire rating duration. The listing of fire protection-rated glazing in excess of 1 hour and possibly up to 3 hours will increase the opportunity for its' misuse in building construction where fire resistance-rated glazing with radiant heat protection should be used. Authorities Having Jurisdiction may not be able to determine if glazing is fire protection-rated or fire resistance-rated by looking at the glazing. Having a distinction based on the fire rating duration will help AHJ's determine the appropriate type of glazing is being used in a fire rated assembly.
2. The fire window assembly rating of 1-1/2 hours is not consistent with intent that a fire window assembly using fire protection-rated glazing is 3/4 hour. An exterior wall with a fire resistance rating of 1 hour or greater specifying a fire window assembly of 1-1/2 hour should be deleted from this table since a fire window assembly is 3/4 hour.
3. Footnotes b and c have been added to specify where the area limitation requirements can be found for clarity.

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

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

FS135–07/08
Table 715.5, 715.5.7, 715.5.7.1, 715.5.7.2 (New)

Proponent: William O'Keeffe, SAFTIFIRST

Revise as follows:

TABLE 715.5 (Supp)
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY		REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:	Fire walls	All	NP[a]
	Fire barriers	>1 1	NP[a] ¾
	Smoke barriers	1	¾
	Fire partitions	1 ½	¾ 1/3[b]
Exterior walls		>1 1	1 ½ ¾
Party wall		All	NP

NP = Not Permitted.

a. Not permitted except as specified in Section 715.2.

b. For testing requirements, see Section 715.5.7.2

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

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

715.5.7.2 Where 1/3-hour fire protection window assemblies permitted. Fire-protection rated glazing in fire window assemblies tested to NFPA 257 in ½-hour fire -resistant rated fire partitions requiring 1/3-hour opening protection in accordance with Table 715.5 shall be exempt from the hose stream test.

715.5.7.2 3 ~~Size~~ Area limitations. The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

Reason: This is a clarification and addition to the code to specifically address the rating requirements for interior windows. The more correct terminology for section 715.5.7.3 should be "area" limits, rather than "size" limits. The new proposed section 715.5.7.2 addresses 20-minute windows tested to NFPA 257 now specified in Table 715.5 for ½-hour fire partitions. Since a ½-hour fire resistance rated fire partition assembly is tested to ASTM E119 without the hose stream test, and fire doors tested for 20-minutes as required in Table 715.4 are not subject to the hose stream test, for consistency in the code, the fire window component of a ½-hour fire partition should be likewise exempt from the hose stream test under NFPA 257.

Cost Impact: This will reduce the cost of construction where 20-minute windows are required.

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

FS136–07/08
715.5.7, 715.5.7.1, 715.5.7.2

Proponent: William O'Keeffe, SAFIFIRST

Revise as follows:

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

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

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

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

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

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

FS137–07/08

716.2.1 (IMC [B] 607.2.1)

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

Revise as follows:

716.2.1 (IMC [B] 607.2.1) Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system designed in accordance with Section 909, approved alternative protection shall be utilized. Where mechanical systems including ducts and dampers utilized for normal building ventilation serve as part of the smoke control system, the expected performance of these systems in smoke control mode shall be addressed in the rational analysis required by Section 909.4.

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

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

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

FS138–07/08

716.2.1, 716.3, 716.5.2, 716.5.3, 716.5.3.1 (New) [IMC [B] 607.2.1, [B] 607.3, [B] 607.5.2, [B] 607.5.5, [B] 607.5.5.1 (New)]

Proponent: Lee J. Kranz, City of Bellevue, representing himself

1. Delete without substitution as follows:

~~**716.2.1 (IMC [B] 607.2.1) Smoke control system.** Where the installation of a fire damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.~~

(Renumber subsequent sections)

2. Revise as follows:

716.3 (IMC [B] 607.3) Damper testing and ratings. Dampers shall be listed and bear the label of an approved testing agency indicating compliance with the standards in this section. Fire dampers shall comply with the requirements ofUL555. Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation, smoke control and air-conditioning systems designed to operate with fans on during a fire. Smoke dampers shall comply with the requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. Ceiling radiation dampers shall comply with the requirements of UL 555C.

716.5.2 (IMC [B] 607.5.2) (Supp) 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 2. 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 H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a 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 [B] 607.5.3) (Supp) 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 ASTME119 or UL263 as part of the fire-resistance 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 ~~3~~. 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.
5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust system when installed in accordance with the *International Mechanical Code*.

716.5.3.1 (IMC [B] 607.5.5.1) Smoke control system shafts. A combination smoke/fire damper shall be installed in smoke control system shaft penetrations.

Reason: Fire dampers are classified by UL 555 for use in static and dynamic airflow conditions. Fire dampers installed in air distribution systems that remain in operation after smoke or heat from a fire is detected (a dynamic airflow condition) must be labeled for such use. Static fire dampers may not operate properly under dynamic conditions: therefore, fire dampers used in systems designed with dynamic air flow must be tested and labeled for closure under anticipated airflow and pressure conditions. Currently there is no charging language to require a combination fire/smoke damper to be used in shaft openings which serve smoke control systems. This code change provides direction to use a combination fire/smoke damper, which is considered to be a dynamic damper, to provide adequate protection for the shaft in cases where the smoke control system is overcome by high heat fires. Item #3 of Section 716.3.1.1 gives criteria for combination fire/smoke damper actuation which allows the damper to be

operated by fire dept. personnel up to a temperature of 350 degrees F. The current direction in Section 716.2.1 to use alternate protection where the installation of a fire damper will interfere with the operation of a required smoke control system does not provide adequate direction. Exception #2 of Section 716.5.2 and exception #1.3 of Section 716.5.3 are no longer necessary.

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

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

FS139–07/08

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

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

Revise as follows:

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

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

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

716.3.2.1 Fire damper ratings. Fire dampers shall have the minimum fire protection rating specified in Table ~~716.3.1~~ 716.3.2.1 for the type of penetration.

TABLE 716.3.~~1~~ 2.1
FIRE DAMPER RATING

(Portions of table not shown do not change)

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

~~**716.3.1.1 3**~~ **716.3.3 (IMC [B] 607.3.1.1) ~~Fire~~ Damper ~~actuating device~~ actuation.** Damper actuation shall be in accordance with 716.3.3.1 through 716.3.3.3 as applicable.

716.3.3.1 Fire damper actuation device. The fire damper ~~actuating~~ actuation device shall meet one of the following requirements:

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

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

~~716.3.2.1~~ 716.3.3.2 **(IMC [B] 607.3.2.1) Smoke damper actuation methods.** The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

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

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

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

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

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

FS140–07/08
716.3.3 [IMC [B] 607.3.3 (New)]

Proponent: Craig Rutledge, Life Safety Services, LLC

Add new text as follows:

716.3.3 (IMC [B] 607.3.3) Damper maintenance and testing. Fire and smoke dampers shall be operated (with fusible link removed where applicable) not less than once every four years to verify that they fully close and moving parts shall be lubricated as necessary.

Reason: Currently the IMC does not address the periodic maintenance and testing of fire and smoke dampers. There are numerous reasons to add this requirement.

The Testing and Maintenance of Dampers is currently included in NFPA 90A – Standard for the Installation of Air-Conditioning and Ventilating Systems. Section 5.4.7 of NFPA 90A States "At least every 4 years, fusible links (where applicable) shall be removed; all dampers shall be operated to verify that they fully close; the latch, if provided, shall be checked; and moving parts shall be lubricated as necessary."

The omission of the testing of dampers from The IMC while it is present in NFPA Codes could provide confusion and lack of clarity for code enforcement officials and property owners.

Section 102.3 of the IMC states "Mechanical systems, both existing and new, and parts thereof shall be maintained in proper operating condition in accordance with the original design and in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in compliance with the code edition under which they were installed. The owner or the owner's designated agent shall be responsible for maintenance of mechanical systems. To determine compliance with this provision, the code official shall have the authority to require a mechanical system to be reinspected. "

Therefore, as per IMC Section 102.3 clearly states that devices (e.g. dampers) shall be maintained in proper operating condition in accordance with the original design…." Thus, so that the specific section on dampers in the IMC reads in concert with the general provision of the IMC regarding maintenance the new text for the maintenance of dampers should be added.

Damper manufacturers recommend the testing and maintenance of dampers. The top damper manufactures in the country, Ruskin, Greenheck, and Nailor recommend testing the vast majority of their dampers every six (6) months. We have attached the Maintenance Instructions for the respective damper manufactures. Additionally, the Air Movement and Control Association (AMCA) have recently re-written its Application

Manual for Fire/Smoke Dampers and it includes testing and maintenance recommendations. The AMCA Manual that addresses this is Publication 503, and it recommends "fire / smoke dampers and smoke dampers be maintenance cycled at least once every 6 months." Industry leader, Ruskin, in damper manufacturing states that AMCA's recommendation for maintenance cycling is much more realistic than that of NFPA 90A.

When the leading manufacturers of the product that is being inspected thinks that the product should be tested every six (6) months for best operation, then adding the text to inspect dampers every four years should be a minimum requirement. Increased testing could potentially increase the life of the damper, and lessen the likelihood of damper replacement and in turn save the owners the substantial cost of damper replacement.

Reduce risk exposure to the owner, building occupants, and insurance companies. If in the event of a fire a smoke or fire damper fails to operate, what are the legal costs, the costs to the insurance carriers, the cost to rebuild a facility? And how do you equate the loss of an injured building occupant or if a building occupant were to perish?

These things do happen too. The NFPA's own report on the fire at the MGM Hotel fire in Las Vegas stated that fire dampers "did not completely close" and that as a result "products of combustion were distributed throughout the HVAC equipment…….providing a method for spread of smoke that may also have contributed to several fatalities." There were a total of 679 injuries and 84 fatalities in the MGM fire. There is also the case of the fire at One Meridian Plaza in Philadelphia, Pennsylvania. That fire led to the death of 3 fire fighters and injury of 24 additional fire fighters. The fire also led to an estimated $100 million in property loss, and over $4 billion in civil damage claims. The investigation of the fire showed that the building had four (4) air handling systems, and did not appear to have fire dampers in the shafts to prevent the fire from spreading throughout the building.

Additionally, dampers have been tied to preventing the spread of toxic fumes in a terrorist attack. An Investigation of the World Trade Center Disaster conducted by the U.S. Department of Commerce's National Institute of Standards and Technology found that if there had been operable fire and smoke dampers in the two towers that "would of acted to slow the development of hazardous conditions on the uppermost floors of the building" in WTC 1 and 2, and in turn potentially providing more time for occupants to exit the building. A copy of the PowerPoint presentation regarding this matter prepared by David Evans, Project Leader for the National Institute of Standards and Technology is attached.

Given the potential substantial cost savings by having properly operating dampers and the increased safety measure provided to building occupants it easily justifies adding text to the IMC to include a provision for the maintenance and testing of fire and smoke dampers.

There is a relatively high rate of damper operating failures. Life Safety Services, LLC has inspected over 100,000 dampers throughout the United States in the past three years, and their estimate is that approximately 6% - 9% of dampers fail inspection. Periodic maintenance and testing should lower failure rates to a more reasonable level, and in turn lower the risk exposure to owners.

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National Fire Protection Association – Report, "High-rise Office Building Fire One Meridian Plaza, Philadelphia, Pennsylvania" – February 23, 1991
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Cost Impact: The code change proposal will not increase the cost of construction. No impact on cost of new construction.

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

FS141–07/08

716.5 (IMC [B] 607.5)

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

Revise as follows:

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

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

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

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

FS142–07/08
716.5.3 (IMC [B] 607.5.5)

Proponent: David Frable, US General Services Administration

Revise as follows:

716.5.3 (IMC [B] 607.5.5) (Supp) 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 ASTME119 or UL263 as part of the fire-resistance 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.
5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust system when installed in accordance with the *International Mechanical Code*.
6. <u>In Group B 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 unless smoke dampers are used as part of an approved smoke control system in accordance with Section 909</u>.

Reason: The purpose of this code change is to acknowledge that Group B occupancies protected by an operational automatic fire sprinkler system provide an acceptable level of safety for building occupants and therefore does not warrant the need for the installation of smoke dampers at all penetrations of shaft duct/air transfer opening penetrations, unless smoke dampers are used as part of an approved smoke control system.

The justification for smoke dampers in the original code change (FS164-99) was that smoke can travel through a duct to locations in a building that are remote from the fire. While this statement is correct, smoke travel through ducted ventilation shafts has not been a contributing factor to fire deaths in sprinklered Group B occupancies in recent history. Smoke detectors installed at air handling equipment have been a requirement to accomplish automatic shut off of the air handling equipment to minimize the potential of smoke spread through ventilation ducts. In addition, all high-rise fires where smoke spread has been cited as a problem have either been in unsprinklered buildings or partially sprinklered buildings. A recent comprehensive analysis in 2005 of high-rise fires by NFPA identified that no fatalities had occurred for more than a decade in any U.S. high-rise occupancy (> 10 story) other than the 6 fatalities in the unsprinklered Cook County Office Building (2003); the 1 fatality in the unsprinklered First Interstate Bank Building (1991); and 3 firefighter fatalities in the partially sprinklered (unsprinklered on floor of fire origin and several floors above) Meridan Plaza Building (1991). The Murrah Federal Building (1995) and the World Trade Center (1993 & 2001) bombings were excluded from this analysis.

Therefore, one can conclude that smoke spread in shaft duct/air transfer opening penetrations has not been a problem in Group B occupancies protected throughout with an operational fire sprinkler system since the fire sprinklers both control the burning rate (and thus limit smoke production) and maintain near ambient temperature which limits the buoyancy forces that drive smoke to the shafts where stack affect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires.

The recently issued NFPA 2005 report on sprinkler reliability also indicated that automatic fire sprinklers successfully operating in reported structural fires was an exemplary 93%. In addition, NFPA also reported that two-thirds of the reported automatic fire sprinkler system failures were because the automatic fire sprinkler systems were shut off. Since the IBC requires the supervision of the automatic fire sprinkler system, one can conclude that the successful operation of an automatic fire sprinkler system designed and installed in compliance with the IBC requirements could be reasonably estimated at 98%. NFPA also reported that the percentage of successfully operating automatic fire sprinkler systems is probably

higher since a large percentage of small fire extinguished by fire sprinklers are not reported. Therefore, for an automatic fire sprinkler system designed and installed in accordance with the IBC requirements, the successful operation of an automatic fire sprinkler system could be reasonably estimated at 98% or more.

Please also keep in mind that the purpose of the IBC is to provide minimum requirements to safeguard occupants of buildings from fire and other hazards attributed to the built environment that are based on sound technical documentation.

Based on all these points stated above, we strongly believe that it unreasonable to state that Group B occupancies protected throughout with automatic fire sprinkler system is not a rationale alternative to installing smoke dampers in shaft duct/air transfer opening penetrations and that automatic fire sprinklers are not an effective method for slowing or stopping the spread of smoke throughout a building protected throughout with an operational automatic fire sprinkler system.

In addition, we believe the current requirement for installing smoke dampers in shaft duct/air transfer opening penetrations in Group B occupancies, protected throughout by an operational automatic fire sprinkler system has not been based on sound technical documentation and has significantly increased building construction and maintenance costs without increasing the overall safety to the building occupants. A rough cost estimate for the installation of smoke dampers and associated required equipment range from $1500-$3000 per damper or even more for large dampers. This does not include the ongoing cost of testing the dampers and detectors.

Lastly, it should also be noted that some jurisdictions (e.g., Commonwealth of Virginia) are granting similar modifications to the requirement for smoke dampers in exhaust ducts because it is impractical to comply with the IBC and there is no demonstrated need.

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

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

FS143–07/08

716.5.3 (IMC [B] 607.5.5), Chapter 35 (New)

Proponent: Randall R. Dahmen, representing himself

1. Revise as follows:

716.5.3 (IMC [B] 607.5.5) (Supp) 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 fire-resistance 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.
5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust system when installed in accordance with the *International Mechanical Code*.
6. Smoke dampers are not required in ducts that are used in the exhaust portion of systems that are designed and installed in accordance with NFPA 45.

2. Add standard to Chapter 35 as follows:

NFPA

45-04 Standard on Fire Protection for Laboratories Using Chemicals

Reason: NFPA 45 is a nationally recognized standard for fume hood exhaust systems. The NFPA 45 standard does not allow for the installation of fire dampers per Section 8.10.3.1. This submitter requests that an exception for smoke dampers be recognized by the IBC and the IMC (IBC is primary reference)

Reasoning for no smoke dampers includes the fact that such dampers have been known to incorrectly operate when placed in corrosive/hazardous airstreams for extended periods of time. Additionally, should these dampers fail at an inappropriate time, this would endanger the lives of those located within the confines of the building. Lastly, if the fire condition were to occur, firefighters would prefer that the corrosive/hazardous airstream(s) continue to exhaust to the building's exterior so that actions in dealing with the internal fire conditions are mainly limited to only the fire conditions and not to both fire and exhaust hood conditions.

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

Analysis: A review of the standard proposed for inclusion in the code, NFPA 45, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

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

FS144–07/08
716.5.3 (IBC [B] 607.5.5)

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

Revise as follows:

716.5.3 (IMC [B] 607.5.5) (Supp) 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 ASTME119 or UL263 as part of the fire-resistance 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.~~
~~5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust system when installed in accordance with the *International Mechanical Code*.~~

1. Fire and smoke dampers are not required where steel exhaust subducts extend at least 22 inches (559 mm) vertically in exhaust shafts provided there is a continuous airflow upward to the outside.
2. Fire dampers are not required where penetrations are tested in accordance with ASTM E 119 as part of the fire-resistance rated assembly.

3. Fire and smoke dampers are not required where ducts are used as part of an approved smoke-control system in accordance with Section 909.
4. Fire and smoke dampers are not required where 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.
5. Smoke dampers are not required where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.

Reason: This proposal has been submitted to simplify the code and to make this section more user friendly. Over the last two cycles, there have been various compromises made that have added exceptions for B and subsequently R occupancies. These changes reinforce why this change should be approved.

FS164-99 was the original code change to the International Building Code that required smoke dampers in addition to fire dampers at duct penetrations of shafts. This change was incorporated during the comment phase of the development of the first edition of the International Building Code.

This requirement did not exist in any of the model building codes (BOCA, UBC & SBC) or in NFPA 101 (Life Safety Code).

The justification for smoke dampers in the original code change is that smoke can travel through a duct to locations in a building that are remote from the fire. While this statement is correct, smoke travel through ducted ventilation shafts has not been a contributing factor to fire deaths in buildings in recent history. Smoke detectors at HVAC equipment have been a requirement to accomplish automatic shut off to minimize the potential of smoke spread through ventilation ducts. For example, the majority of fire deaths in upper stories of the MGM grand fire of 1980 were due to smoke spread through stair shafts and seismic joints that were not protected. Fancoil units in guestrooms drew air from the corridors which also contributed to fatalities. While the HVAC system was cited as a potential source of smoke spread, smoke detectors were not present to provide automatic shutoff of equipment (NFPA Preliminary Report of the MGM Grand Hotel Fire). There was only one fatality in an upper story of the San Juan DuPont fire in 1986 which was not readily explained. Smoke travel through ventilation shafts was not a contributing factor in the First Interstate fire in Los Angeles or the Meridian fire in Philadelphia.

Even in the World Trade Center bombing of 1993, 6 fatalities were attributed to the explosion, but there were no fatalities due to the effects of smoke (Isner, Michael S. and Klem, Thomas J., "World Trade Center Explosion and Fire," National Fire Protection Association).

While these fires were thoroughly investigated, and code changes promulgated to address fire safety issues, smoke dampers in duct penetrations of shafts were never adopted as changes to any of the model codes as a result of these fires.

The original code change (FS164-99) did not present any technical substantiation for the additional requirement for smoke dampers at all penetrations of shafts. The comments submitted by Mr. Frable of the GSA and Mr. Perry of BOMA to the original proposal continue to be valid. In Mr. Frable's comment he stated, "In addition, no technical information or justification was provided on why the steel exhaust sub-duct exception, with continuous air-flow, is inadequate, and requires the addition of a smoke damper. The proponent fails to point out that the exceptions apply only to fire dampers, meaning that even where the exceptions are applied, a smoke damper is required." In Mr. Perry's comment to the original proposal, he states, "This proposal includes either an inadvertent oversight on behalf of the proponent, or an interesting new approach to exponentially expanding the market for smoke dampers. In either case, it should be disapproved." He concludes his comment with, "There was virtually no justification offered to substantiate the addition of smoke dampers to all shaft duct/air transfer opening penetrations, regardless of building size and height. There was none at all offered to essentially eliminate the exceptions which have been used in the model codes for years."

The 2003 addition of the IBC was modified so that smoke dampers are not required in toilet exhaust duct penetrations in fully sprinklered Group B Occupancy buildings only. While fire dampers can be eliminated if a steel subduct complying with the IBC is installed, a smoke damper would be required in all other occupancy types including hotels and apartment buildings.

Performance of Fully Sprinklered Buildings

It is important to note that the IBC requires sprinkler protection for most buildings of any significant size or occupant load (see section 903). Therefore, the performance of sprinklered buildings is relevant. There has never been a multiple life loss fire in a fully sprinkler building of any occupancy type where the occupants have not been intimate with the fire or where an explosive or terrorist event has occurred.

The original submitter of the code change in adding the additional smoke dampers does not question the reliability of sprinklers, he questions whether a 98% success factor is adequate to justify not having smoke dampers at duct penetrations and shafts. There were no fire incidents identified as part of the code change to demonstrate the need. The need for smoke dampers at ventilation shafts as a general requirement had never before been considered to be necessary to provide a reasonable level of life safety even in unsprinkler buildings.

Implications of the Requirement

The requirement for installation of smoke dampers drives additional features and requirements. These include a smoke detector in the duct to activate the damper which would be required to be supervised and connected to a fire alarm panel. HVAC controls and logic would be required to cause the appropriate damper operation upon smoke detector initiation. Ongoing maintenance and testing of the above devices is required on a regular frequency to assure operability.

A rough installed cost estimate for the smoke dampers and associated required equipment ranges from $1500-$3000 per damper or even more for large dampers. This does not include the ongoing cost of testing the dampers and detectors.

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

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

FS145–07/08
716.5.4 (IMC [B] 607.5.3)

Proponent: Lori Lee Graham, City of Portland, OR

Revise as follows:

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

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

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

(Exceptions not shown remain unchanged)

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

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

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

FS146–07/08
716.6.1 (IMC [B] 607.6.1)

Proponent: John A. Robertson, Avera McKennan, representing South Dakota Healthcare Engineers Code Committee

Revise as follows:

716.6.1 (IMC [B] 607.6.1) (Supp) Through penetrations. ~~In occupancies other than Groups I-2 and I-3, a~~ 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~~ shall have shaft enclosure protection with fire rating equivalent to the floor assembly, ~~provided~~ a listed fire damper ~~is~~ installed at the floor line or ~~the duct is protected~~ protection 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 m^2) in any 100 square feet (9.3 m^2) 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.

Reason: The purpose of the proposed code change is to eliminate the redundant fire separation and fire dampering currently required in two story I-2 and I-3 occupancies. We are not aware of previous fire damper failures that would require additional protection for the two occupancies identified in the code section. There could be a significant cost reduction in the initial construction of the facility when each protected shaft enclosure would typically be about $2000. This duplicate fire damper and shaft enclosure also adds $50 annually for each shaft enclosure to the ongoing operational cost for the facility to maintain the fire rated enclosure and maintain the mechanical fire damper.

Cost Impact: The code change proposal will not increase the cost of construction. This proposed change would reduce construction cost and operational cost for I-2 and I-3 occupancies.

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

FS147–07/08
717.2.5, 717.2.5.1 (New); IRC R602.8

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

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

PART I – IBC FIRE SAFETY

Delete and substitute as follows:

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

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

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

PART II – IRC BUILDING/ENERGY

Revise as follows:

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

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

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

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

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

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

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

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

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

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

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

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

FS148–07/08

202 (New), 719.1, 719.2, 719.2.1, 2604 through 2604.5.2 (New), Chapter 35 (New)

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

1. Add new definition as follows:

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

2. Revise as follows:

719.1 (Supp) General. Insulating materials, including facings such as vapor retarders and vapor-permeable membranes, similar coverings, and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture, or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core foil insulation shall comply with Section 2604.

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

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

719.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-developed limitations do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

Exception: All layers of single and multilayer reflective plastic core foil insulation shall comply with Section 2604.

3. Add new text as follows

SECTION 2604
REFLECTIVE PLASTIC CORE FOIL INSULATION

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

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

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

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

2604.3.2Exposed applications. If the reflective plastic core foil insulation is used exposed it shall be classified for surface burning characteristics in accordance with Section 803.1 and the requirements of this code for the application.

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

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

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

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

(Renumber subsequent sections)

4. Add standard to Chapter 35 as follows:

ASTM

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

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

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

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

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

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

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

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

This is an alternate proposal to one that requires reflective plastic core foil insulation materials to always have a minimum Class B (75 flame spread index) when used exposed. In this proposal the materials is not required to have a flame spread index different than any other interior finish material is required to have for that application (section 2604.3.2). The approval of this proposal would have the effect of permitting the use of foam plastic, covered with reflective foil, with a Class C (200 flame spread index).

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

Analysis: A review of the standard proposed for inclusion in the code, ASTM E 2231, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

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

FS149–07/08

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

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

1. Add new definition as follows:

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

2. Revise as follows:

719.1 General. Insulating materials, including facings such as vapor retarders and vapor-permeable membranes, similar coverings, and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture, or other atmospheric conditions shall not be permitted.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core foil insulation shall comply with Section 2604.

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

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

719.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-developed limitations do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

Exception: All layers of single and multilayer reflective plastic core foil insulation shall comply with Section 2604.

3. Add new text as follows

SECTION 2604
REFLECTIVE PLASTIC CORE FOIL INSULATION

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

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

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

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

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

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

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

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

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

(Renumber subsequent sections)

4. Add standard to Chapter 35 as follows:

ASTM

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

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

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

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

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

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

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

Analysis: A review of the standard proposed for inclusion in the code, ASTM E 2231, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

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

FS150–07/08
Table 720.1 (2)

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

Revise as follows:

TABLE 720.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS [a,o,p]

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm^2, 1 cubic foot = 0.0283 m^3.

a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.
b. Thickness shown for brick and clay tile is nominal thicknesses unless plastered, in which case thicknesses are net. Thickness shown for concrete masonry and clay masonry is equivalent thickness defined in Section 721.3.1 for concrete masonry and Section 721.4.1.1 for clay masonry. Where all cells are solid grouted or filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight

aggregate, the equivalent thickness shall be the thickness of the block or brick using specified dimensions as defined in Chapter 21. Equivalent thickness may also include the thickness of applied plaster and lath or gypsum wallboard, where specified.

c. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is at least 75 percent of the gross cross-sectional area measured in the same plane.
d. Shall be used for nonbearing purposes only.
e. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided 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.
f. The fire-resistance time period for concrete masonry units meeting the equivalent thicknesses required for a 2-hour fire-resistance rating in Item 3, and having a thickness of not less than 75/8 inches is 4 hours when cores which are not grouted are filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, sand or slag having a maximum particle size of 3/8 inch.
g. The fire-resistance rating of concrete masonry units composed of a combination of aggregate types or where plaster is applied directly to the concrete masonry shall be determined in accordance with ACI 216.1/TMS 0216. Lightweight aggregates shall have a maximum combined density of 65 pounds per cubic foot.
h. See also Note b. The equivalent thickness shall be permitted to include the thickness of cement plaster or 1.5 times the thickness of gypsum plaster applied in accordance with the requirements of Chapter 25.
i. Concrete walls shall be reinforced with horizontal and vertical temperature reinforcement as required by Chapter 19.
j. Studs are welded truss wire studs with 0.18 inch (No. 7 B.W. gage) flange wire and 0.18 inch (No. 7 B.W. gage) truss wires.
k. Nailable metal studs consist of two channel studs spot welded back to back with a crimped web forming a nailing groove.
l. Wood structural panels shall be permitted to be installed between the fire protection and the wood studs on either the interior or exterior side of the wood frame assemblies in this table, provided the length of the fasteners used to attach the fire protection is increased by an amount at least equal to the thickness of the wood structural panel.
m. The design stress of studs shall be reduced to 78 percent of allowable F'_c with the maximum not greater than 78 percent of the calculated stress with studs having a slenderness ratio *le/d* of 33. The wood studs shall be designed to resist the load combinations specified in Section 1605.4. The load due to the design fire, A_k, shall be set to zero.
n. For properties of cooler or wallboard nails, see ASTM C 514, ASTM C 547 or ASTM F 1667.
o. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA 600 shall be accepted as if herein listed.
p. NCMA TEK 5-8A shall be permitted for the design of fire walls.
q. The design stress of studs shall be equal to a maximum of 100 percent of the allowable F'_c calculated in accordance with Section 2306

Reason: The purpose of this proposal is to establish structural design requirements for determining the maximum design loads in compression permitted to be imposed on fire-resistance-rated wood stud bearing walls that are consistent with the risk. This proposal was prepared in conjunction with a related proposal to add load combinations for the structural design of building elements that are also required to be fire-resistance-rated.

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

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

FS151–07/08

Table 720.1 (2)

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

Revise as follows:

TABLE 720.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS [a,o,p]

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm^2, 1 cubic foot = 0.0283 m^3.

a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.
b. Thickness shown for brick and clay tile is nominal thicknesses unless plastered, in which case thicknesses are net. Thickness shown for concrete masonry and clay masonry is equivalent thickness defined in Section 721.3.1 for concrete masonry and Section 721.4.1.1 for clay masonry. Where all cells are solid grouted or filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, the equivalent thickness shall be the thickness of the block or brick using specified dimensions as defined in Chapter 21. Equivalent thickness may also include the thickness of applied plaster and lath or gypsum wallboard, where specified.
c. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is at least 75 percent of the gross cross-sectional area measured in the same plane.
d. Shall be used for nonbearing purposes only.
e. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided 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.
f. The fire-resistance time period for concrete masonry units meeting the equivalent thicknesses required for a 2-hour fire-resistance rating in Item 3, and having a thickness of not less than 75/8 inches is 4 hours when cores which are not grouted are filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, sand or slag having a maximum particle size of 3/8 inch.
g. The fire-resistance rating of concrete masonry units composed of a combination of aggregate types or where plaster is applied directly to the concrete masonry shall be determined in accordance with ACI 216.1/TMS 0216. Lightweight aggregates shall have a maximum combined density of 65 pounds per cubic foot.
h. See also Note b. The equivalent thickness shall be permitted to include the thickness of cement plaster or 1.5 times the thickness of gypsum plaster applied in accordance with the requirements of Chapter 25.
i. Concrete walls shall be reinforced with horizontal and vertical temperature reinforcement as required by Chapter 19.
j. Studs are welded truss wire studs with 0.18 inch (No. 7 B.W. gage) flange wire and 0.18 inch (No. 7 B.W. gage) truss wires.
k. Nailable metal studs consist of two channel studs spot welded back to back with a crimped web forming a nailing groove.
l. Wood structural panels shall be permitted to be installed between the fire protection and the wood studs on either the interior or exterior side of the wood frame assemblies in this table, provided the length of the fasteners used to attach the fire protection is increased by an amount at least equal to the thickness of the wood structural panel.
m. The allowable compression design ~~stress~~ value parallel to grain, F'_c, of the wood studs shall be ~~reduced to~~ no greater than 78 percent of ~~allowable~~ the adjusted compression design value parallel to grain, F_c, ~~with the maximum not greater than 78 percent of the calculated stress with studs having~~ determined in accordance with the AF&PA NDS at a minimum slenderness ratio, le/d, of 33.
n. For properties of cooler or wallboard nails, see ASTM C 514, ASTM C 547 or ASTM F 1667.
o. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA 600 shall be accepted as if herein listed.
p. NCMA TEK 5-8A shall be permitted for the design of fire walls.
q. The allowable compression design ~~stress~~ value parallel to grain, F'_c, of the wood studs shall be equal to a maximum of 100 percent of the allowable adjusted compression design value parallel to grain, F'_c ~~calculated~~ determined in accordance with ~~Section 2306~~ the AF&PA NDS.

Reason: The purpose of this proposal is to update Footnotes (m) and (q) for consistency with the current provisions of the AF&PA National Design Specification for Wood Construction (NDS-05).

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

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

FS152–07/08
Table 720.1(2)

Proponent: Matthew Dobson, Vinyl Siding Institute

Revise table as follows:

TABLE 720.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS a,o,p

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (Inches)			
			4 hour	3 hour	2 hour	1 hour
15. Exterior or interior walls	15-1.17	2"X4" wood studs with double top plates, single bottom plate: interior and exterior sides covered with 5/8" Type X gypsum wallboard, 4' wide nailed 7" on center with 6d cement coated nails or 1 7/8" long No. 6 buglehead dry wall screws, joints covered with paper tape and joint compound, fastener heads covered with joint compound. Exterior covered with solid vinyl siding having a flame spread of 25 or less, mechanically secured in accordance with the manufacturer's recommended installation instructions. Cavity to be filled with 3" thick mineral or glass fiber batts, sprayed cellulose material.	—	—	—	4 ½

(Portions of table not shown remain unchanged)

Reason: Vinyl siding has been recognized for its use in fire resistive assemblies through numerous proprietary reports as well as several generic reports. By adding this provision is will enable to code official to understand what product performance characteristics must be demonstrated in order for the products use in a 1 hour fire rated assemble. VSI's proposal is based on UL U364 which generically allows vinyl siding on this 1 hour fire rated assembly so long as it has a flame spread of 20 or less. We propose changing this specification to 25 to be consistent with the Class rating requirements for interior finish.

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

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

FS153–07/08
Table 720.1(3)

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

Revise table as follows:

TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS[a,q]

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	MINIMUM THICKNESS OF CEILING (inches)	
			2 hour	1 hour
23. Wood I-joist (minimum joist depth 9-1/4″ with a minimum flange depth of 15/16″ and a minimum flange cross sectional area of 2.3 square inches) at 24″ o.c. spacing with 1x4 (nominal) wood furring strip spacer applied parallel to and covering the bottom of the bottom flange of each member, tacked in place. 2″ mineral wool insulation, 3.5 pcf (nominal) installed adjacent to the bottom flange of the I-joist and supported by the 1x4 furring strip spacer.	23-1.1	1/2″ deep single leg resilient channel 16″ on center (channels doubled at wallboard end joints), placed perpendicular to the furring strip and joist and attached to each joist by 1-7/8″ Type S drywall screws. 5/8″ Type C gypsum wallboard applied perpendicular to the channel with end joints staggered at least 4′ and fastened with 1-1/8″ Type S drywall screws spaced 7″ on center. Wallboard joints to be taped and covered with joint compound		<u>5/8</u>
25. Wood I-joist (minimum I-joist depth 9-1/4″ with a minimum flange depth of 1-1/2″ and a minimum flange cross-sectional area of 5.25 square inches; minimum web thickness of 3/8″) @ 24″ o.c., 1-1/2″ mineral ~~fiber~~ <u>wool</u> insulation (2.5 pcf - nominal) resting on hat-shaped <u>furring</u> channels.	25-1.1	Minimum 0.026″ thick hat-shaped channel 16″ o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8″ Type S drywall screws. 5/8″ Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1-1/8″ Type S drywall screws spaced 12″ o.c. in the field and 8″ o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound.		~~Varies~~ <u>5/8</u>
26. Wood I-joist (minimum I-joist depth 9-1/4″ with a minimum flange depth of 1-1/2″ and a minimum flange cross-sectional area of 5.25 square inches; minimum web thickness of 7/16″) @ 24″ o.c., 1-1/2″ mineral ~~fiber~~ <u>wool</u> insulation (2.5 pcf - nominal) resting on resilient channels.	26-1.1	Minimum 0.019″ thick resilient channel 16″ o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8″ Type S drywall screws. 5/8″ Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1″ Type S drywall screws spaced 12″ o.c. in the field and 8″ o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound.		~~Varies~~ <u>5/8</u>
27. Wood I-joist (minimum I-joist depth 9-1/4″ with a minimum flange thickness of 1-1/2″ and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of 3/8″) @ 24″ o.c.	27-1.1	Two layers of 1/2″ Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1-5/8″ Type S drywall screws spaced 12″ o.c. and the face layer is fastened with 2″ Type S drywall screws spaced 12″ o.c. in the field and 8″		~~Varies~~ <u>1</u>

		o.c. on the edges. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24″ from base layer joints. Face layer to also be attached to base layer with 1-1/2″ Type G drywall screws spaced 8″ o.c. placed 6″ from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.		
28. Wood I-joist (minimum I-joist depth 9-1/2″ with a minimum flange depth of 1-5/16″ and a minimum flange cross-sectional area of 1.95 square inches; minimum web thickness of 3/8″) @ 24″ o.c.	28-1.1	Minimum 0.019″ thick resilient channel 16″ o.c.(channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8″ Type S drywall screws. Two layers of 1/2″ Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1-1/4″ Type S drywall screws spaced 12″ o.c. and the face layer is fastened with 1-5/8″ Type S drywall screws spaced 12″ o.c. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24″ from base layer joints. Face layer to also be attached to base layer with 1-1/2″ Type G drywall screws spaced 8″ o.c. placed 6″ from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.		~~Varies~~ 1
29. Wood I-joist (minimum I-joist depth 9-1/4″ with a minimum flange depth of 1-1/2″ and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of 3/8″) @ 24″ o.c. ~~with hat-shaped channels supporting the middle and face layers of gypsum wallboard~~. Unfaced fiberglass insulation is installed between the I-joists supported on the upper surface of the flange by stay wires spaced 12″ o.c.	29-1.1	Base layer of 5/8″ Type C gypsum wallboard attached directly to I-joists with 1-5/8″ Type S drywall screws spaced 12″ o.c. with ends staggered. Minimum 0.0179″ thick ~~resilient~~ hat-shaped 7/8-inch furring channel 16″ o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8″ Type S drywall screws after the base layer of gypsum wall board has been applied. The middle and face layers of 5/8″ Type C gypsum wallboard applied perpendicular to the channel with end joints staggered. The middle layer is fastened with 1″ Type S drywall screws spaced 12″ o.c. The face layer is applied parallel to the middle layer but with the edge joints offset 24″ from those of the middle layer and fastened with 1-5/8″ Type S drywall screws 8″ o.c. The joints shall be taped and covered with joint compound.	2-3/4	~~Varies~~
30. Channel-shaped 18 gauge steel joists (minimum depth 8″) spaced a maximum 24″ o.c. supporting tongue-and-groove wood structural panels (nominal minimum 3/4″ thick) applied perpendicular to framing members. Structural panels	30-1.1	Base layer 5/8″ Type X gypsum board applied perpendicular to bottom of framing members with 1-1/8″ Type S-12 screws spaced 12″ o.c. Second layer 5/8″ Type X gypsum board attached perpendicular to framing members with 1-5/8″ Type S-12 screws spaced 12″ o.c. Second layer joints offset 24″ from base	3-3/8	

attached with 1-5/8″ Type S-12 screws spaced 12″ o.c.		layer. Third layer 5/8″ Type X gypsum board attached perpendicular to framing members with 2-3/8″ Type S-12 screws spaced 12″ o.c. Third layer joints offset 12″ from second layer joints. Hat-shaped 7/8-inch rigid furring channels applied at right angles to framing members over third layer with two 2-3/8″ Type S-12 screws at each framing member. Face layer 5/8″ Type X gypsum board applied at right angles to furring channels with 1-1/8″ Type S screws spaced 12″ o.c.		

(Portions of table not shown remain unchanged)

Reason: The changes are proposed to make technical improvements to the assemblies in Table 720.1(3) and to also make them more consistent with the data in Proposal FS148-04/05-AS, which is the origin of the assemblies.

"Mineral fiber" is changed to "mineral wool" in the column for floor or roof construction at Assemblies 25-1.1 and 26-1.1 because corresponding Diagrams #25 and #26 from FS148-04/05 specify mineral wool. Refer to Item #3 in each of the diagrams.

"Resilient channel" is changed to "hat-shaped 7/8-inch furring channel" in the column for ceiling construction at Assembly 29-1.1 because corresponding Diagram #29 from FS148-04/05 specifies hat-shaped furring channel. Refer to Item #5 of the diagram. The columns for minimum ceiling thickness are also changed from 1-hour to 2-hour assemblies because Diagram #29 specifies a 2-hour, not a 1-hour, fire-resistance rating.

"Varies" is changed to actual thickness in the columns for minimum ceiling thickness because the ceiling thicknesses do not vary in these cases. For Assemblies 23-1.1 and 25-1.1 through 28-1.1, the thickness equals the thickness of gypsum board. For Assembly, 29-1.1, the thickness equals the thickness of the furring channel plus the gypsum board (3 x 5/8 + 7/8).

The language on hat-shaped channels is deleted from the column for floor or roof construction at Assembly 29-1.1 because the channels are between the layers of gypsum board at the ceiling and are not part of the floor or roof construction.

A height of 7/8-inch is added in the column for floor or roof construction at Assembly 30-1.1 because the ceiling thickness of 3-3/8 inch specified in the current 2006 IBC matches the thickness of the gypsum board plus 7/8-inch channels (4 x 5/8 + 7/8).

"Furring" is added to the column for floor or roof construction at Assembly 25-1.1 because corresponding Diagram #25 from FS148-04/05 specifies hat-shaped furring channels. Refer to Item #5 of the diagram.

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

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

FS154–07/08

721.2.4.1, 721.4.1.1 (New), 721.2.4.1.2 (New), 721.2.4.2, 721.2.4.3 (New), 721.2.4.5

Proponent: Joseph J. Messersmith, Jr, PE, Portland Cement Association; Daniel Falconer, PE, American Concrete Institute

Revise as follows:

721.2.4 Concrete columns. Concrete columns shall comply with this section.

721.2.4.1 Minimum size. The minimum overall dimensions of reinforced concrete columns for fire-resistance ratings of 1 hour to 4 for exposure to fire on all sides hours shall comply with ~~Table 721.2.4~~ this section.

721.2.4.1.1 Concrete strength less than or equal to 12,000 psi. For columns made with concrete having a specified compressive strength, f'_c, of less than or equal to 12,000 psi (82.7 MPa), the minimum dimension shall comply with Table 721.2.4.

721.2.4.1.2 Concrete strength greater than 12,000 psi. For columns made with concrete having a specified compressive strength, f'_c, greater than 12,000 psi (82.7 MPa), for fire-resistance ratings of 1 hour to 4 hours the minimum dimension shall be 24 inches (610 mm).

721.2.4.2 Minimum cover for R/C columns. The minimum thickness of concrete cover to the main longitudinal reinforcement in columns, regardless of the type of aggregate used in the concrete and the specified compressive strength of concrete, f'_c, shall not be less than 1 inch (25 mm) times the number of hours of required fire resistance or 2 inches (51 mm), whichever is less.

721.2.4.3 Tie and spiral reinforcement. For concrete columns made with concrete having a specified compressive strength, f'_c, greater than 12,000 psi (82.7 MPa), tie and spiral reinforcement shall comply with the following:

1. The free ends of rectangular ties shall terminate with a 135-degree standard tie hook.
2. The free ends of circular ties shall terminate with a 90-degree standard tie hook.
3. The free ends of spirals, including at lap splices, shall terminate with a 90-degree standard tie hook.

The hook extension at the free end of ties and spirals shall be the larger of six bar diameters and the extension required by Section 7.1.3 of ACI 318. Hooks shall project into the core of the column.

(Renumber subsequent sections)

Reason: The proposal updates the column requirements based on new provisions in ACI 216.1-07/TMS 0216.1-07, *Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, the successor to ACI 216.1-97/TMS 0216.1-97, which is presently referenced in Section 721.1 of the IBC. Coordinating provisions within the IBC and those of reference standards, on which the IBC's provisions are based, is desirable to avoid confusion among the various users. The intent of the new provisions is to prevent ties or spirals from disengaging from the longitudinal reinforcement should the concrete cover over the ties or spirals be lost during a fire. The proposal expands on the provisions found in ACI 216.1/TMS 0216.1 by addressing spiral reinforcement, which is typically used for lateral reinforcement in round columns.

A separate proposal updates the reference to the new edition of the standard.

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

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

FS155–07/08
602.4.7, 721.2, 721.3

Proponent: Sarah A. Rice, Schirmer Engineering Corporation

Revise as follows:

602.4.7 Exterior structural members. Where a ~~horizontal~~ fire separation distance of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes shall be permitted to be used externally.

721.2.1.4.3 Nonsymmetrical assemblies. For a wall having no finish on one side or different types or thicknesses of finish on each side, the calculation procedures of Sections 721.2.1.4.1 and 721.2.1.4.2 shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values.

Exception: For an exterior wall with ~~more~~ a fire separation distance greater than 5 feet (1524 mm) ~~of horizontal separation~~, the fire shall be assumed to occur on the interior side only.

721.3.2.3 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values calculated.

Exception: For exterior walls with ~~more~~ a fire separation distance greater than 5 feet (1524 mm) ~~of horizontal separation~~, the fire shall be assumed to occur on the interior side only.

721.4.1.4 Nonsymmetrical assemblies. For a wall having no finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side to be the fire-exposed side of the wall. The fire resistance of the wall shall not exceed the lower of the two values determined.

Exception: For exterior walls with ~~more~~ a fire separation distance greater than 5 feet (1524 mm) ~~of horizontal separation~~, the fire shall be assumed to occur on the interior side only.

721.6.2.3 Exterior walls. For an exterior wall ~~having more~~ with a fire separation distance greater than 5 feet (1524 mm) ~~of horizontal separation~~, the wall is assigned a rating dependent on the interior membrane and the framing as described in Tables 721.6.2(1) and 721.6.2(2). The membrane on the outside of the nonfire-exposed side of exterior walls ~~having more~~ with a fire separation distance greater than 5 feet (1524 mm) ~~of horizontal separation~~ may consist of sheathing, sheathing paper, and siding as described in Table 721.6.2(3).

Reason: The term 'fire separation distance' is defined in 702. The term is most clearly used in Table 602 to determine fire resistance rating of exterior walls based on distance to property lines. It is used in over 40 other places in the code to describe that horizontal distance. These 5 sections currently use the term horizontal separation when the intent of the sections is fire separation distance. The use of the phrase Horizontal separation in these sections is incorrect and could be confused by users as meaning something other than the fire separation distance. The intent of the change is to promote editorial consistency.

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

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

FS156–07/08
Table 721.1.4(1)

Proponent: Joseph J. Messersmith, Jr., PE, Portland Cement Association; Daniel Falconer, PE, American Concrete Institute

Revise table as follows:

TABLE 721.2.1.4(1)
MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF CONCRETE OR CONCRETE MASONRY WALLS

TYPE OF FINISH APPLIED TO CONCRETE OR CONCRETE MASONRY WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate Concrete Masonry: siliceous or calcareous gravel	Concrete: sand lightweight concrete Concrete Masonry: limestone, cinders or unexpected slag	Concrete: lightweight concrete Concrete Masonry: expanded shale, clay or slate	Concrete Masonry: pumice, or expanded slag
Portland cement-sand plaster	1.00	0.75[a]	0.75[a]	0.50[a]
Gypsum-sand plaster ~~or gypsum wallboard~~	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.50	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm.

a. For portland cement-sand plaster 5/8 inch or less in thickness and applied directly to the concrete or concrete masonry on the nonfire-exposed side of the wall, the multiplying factor shall be 1.00.

Reason: The proposal updates the multiplying factor for gypsum wallboard based on values in ACI 216-97/TMS 0216-97, *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, which is referenced in Section 721.1 of the IBC, and the successor to that standard, ACI 216.1-07/TMS 0216.1-07, *Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*. The same multiplying factors for gypsum wallboard also appear in ASCE 29-05, *Standard Calculation Methods for Structural Fire Protection*, which is also referenced in Section 721.1 of the IBC. Coordinating provisions within the IBC and those of reference standards covering the same subject is desirable to avoid confusion among the various users.

Other changes are editorial to make it clear that the factors are applicable to finishes applied to concrete and concrete masonry walls, provide internal coordination within the table and to make it easier to differentiate between aggregates used in concrete and those used in concrete masonry units.

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

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

FS157–07/08
Table 721.2.1.4(1)

Proponent: James C. Gerren, Clark County Department of Development Services, NV

Revise table as follows:

TABLE 721.2.1.4(1)
MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF WALL

TYPE OF FINISH APPLIED TO ~~MASONRY~~ WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate Masonry: siliceous or carbonate; ~~calcareous gravel~~ solid clay brick	**Concrete: sand-lightweight ~~concrete~~ Masonry: ~~limestone, cinders or unexpanded slag,~~ clay tile; hollow clay brick; concrete masonry units of expanded shale and <20% sand**	**Concrete: lightweight ~~concrete~~ Masonry: concrete masonry units of expanded shale, expanded clay, expanded slag, or ~~slate~~ pumice< 20% sand**	**~~Concrete: pumice, or expanded slag~~ Masonry: concrete masonry units of expanded slag, expanded clay, or pumice**
Portland cement-sand plaster	1.00	0.75[a]	0.75[a]	0.50[a]
Gypsum-sand plaster ~~or gypsum wallboard~~	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	~~1.50~~ 1.25	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm

a. For Portland cement-sand plaster 5/8 inch or less in thickness and applied directly to the concrete or masonry on the non-fire-exposed side of the wall, the multiplying factor shall be 1.00.

Reason: The purpose of this proposal is to revise IBC Table 721.2.1.4(1) to be consistent with Table 5.1 of ACI 216.1-97, *Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies*, and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005, *Standard Calculation Methods for Structural Fire Protection*.

Currently, IBC Sections 721.2.1.4.1 and 721.3.2.1 reference Table 721.2.1.4(1) for the multiplying factors for finishes on the non-fire-exposed side of concrete or concrete masonry walls, respectively. The factors in Table 721.2.1.4(1) are used as part of a calculation method to determine the fire-resistance rating of concrete or concrete masonry walls with finishes of gypsum wallboard or plaster applied to one or both sides of the wall. However, the version of Table 721.2.1.4(1) currently provided in the IBC contains several errors, including:

1. The multiplying factors for gypsum wallboard finishes are lumped together with the factors listed for gypsum-sand plaster. This is a mistake in Table 721.2.1.4(1) that has no technical justification. Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005 all identify separate multiplying factors for gypsum wallboard. The proposed revision to Table 721.2.1.4(1) would correct this mistake and make the multiplying factors for gypsum wallboard in Table 721.2.1.4(1) consistent with Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005.
2. The multiplying factor indicated in Table 721.2.1.4(1) for gypsum-vermiculite or perlite plaster finish applied to lightweight concrete or concrete masonry units of expanded shale, expanded clay, or pumice less than 20% sand is liberally incorrect. Specifically, the multiplying factor is currently provided as 1.50, but should be 1.25, as it is in Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005. Please note that without this correction, the factors in columns 3 and 4 of Table 721.2.1.4(1) are identical and could be merged. However, the separate columns are needed because they are supposed to have different multiplying factors for gypsum-vermiculite or perlite plaster finishes.
3. Column 5 of the current version of Table 721.2.1.4(1) incorrectly references concrete only (i.e., does note reference masonry). However, the intent of the factors in column 5 is to apply to masonry only, not concrete. Specifically, the factors in column 5 are intended to apply to concrete masonry units of expanded slag, expanded clay, or pumice. Please note that the factors provided in column 5 of IBC Table 721.2.1.4(1) are not even used in Table 5.1 of ACI 216.1-97. Instead, these factors are provided in Table 4-2 (masonry), but not Table 2-2 (concrete), of ASCE/SFPE 29-2005. The proposed revision would make IBC Table 721.2.1.4(1) consistent with Table 4-2 of ASCE/SFPE 29-2005.
4. The current column headings in IBC Table 721.2.1.4(1) are vague and inconsistent with Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005. The proposed revisions to the column headings would eliminate potential interpretive issues and make Table 721.2.1.4(1) consistent with Table 5.1 of ACI 216.1-97 and Tables 2-2 and 4-2 of ASCE/SFPE 29-2005.

Since IBC Section 721.1 permits the calculated fire resistance of concrete, concrete masonry, and clay masonry assemblies to be in accordance with ACI 216.1-97, it is necessary to revise IBC Table 721.2.1.4(1) to make it consistent with Table 5.1 of ACI 216.1-97. In addition, the proposed revisions would make IBC Table 721.2.1.4(1) consistent with Tables 2-2 and 4-2 of ASCE/SFPE 29-2005, which is an industry standard regarding calculation methods for structural fire protection.

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

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

FS158–07/08
721.3.1.1, Table 721.3.2

Proponent: Jason Thompson, PE, National Concrete Masonry Association (NCMA), representing Masonry Alliance for Codes and Standards (MACS)

Revise as follows:

721.3.1.1 Concrete masonry unit plus finishes. The equivalent thickness of concrete masonry assemblies, T_{ea}, shall be computed as the sum of the equivalent thickness of the concrete masonry unit, T_e, as determined by Section 721.3.1.2, 721.3.1.3, or 721.3.1.4, plus the equivalent thickness of finishes, T_{ef}, determined in accordance with Section 721.3.2:

$T_{ea} = T_e + T_{ef}$ **(Equation 7-6)**
~~$T_e = V_n/LH$ = Equivalent thickness of concrete masonry unit (inch) (mm).~~

~~where:~~

~~V_n = Net volume of masonry unit (inch^3) (mm^3).~~
~~L = Specified length of masonry unit (inch) (mm).~~
~~H = Specified height of masonry unit (inch) (mm).~~

TABLE 721.3.2
MINIMUM EQUIVALENT THICKNESS (inches)
OF BEARING OR NONBEARING CONCRETE MASONRY WALLS[a,b,c,d]

(Portions of table not shown remain unchanged)

For SI: 1 inch = 25.4 mm.

a. Values between those shown in the table can be determined by direct interpolation.
b. Where combustible members are framed into the wall, the thickness of solid material between the end of each member and the opposite face of the wall, or between members set in from opposite sides, shall not be less than 93 percent of the thickness shown in the table.
c. Requirements of ASTM C 55, ASTM C 73, ~~or~~ ASTM C 90, or ASTM C 744 shall apply.
d. Minimum required equivalent thickness corresponding to the hourly fire-resistance rating for units with a combination of aggregate shall be determined by linear interpolation based on the percent by volume of each aggregate used in manufacture.

Reason: Section 721.3.1.2 requires that the equivalent thickness of a concrete masonry unit be determined in accordance with ASTM C 140. This is consistent with the method of determining the equivalent thickness in accordance with the reference standard ACI 216.1/TMS 0216, upon which these provisions are based. Section 721.3.1.1, however, also includes an alternative method of calculating the equivalent thickness of a concrete masonry unit that may result in a value different that that determined through standardized procedures. This change proposal removes the alternative method of calculating the equivalent thickness for consistency and clarity.

Footnote c in Table 721.3.2 is modified to introduce concrete masonry units complying with the requirements of ASTM C 744, consistent with the reference standard ACI 216.1/TMS 0216. The physical properties of ASTM C 744 concrete masonry units must comply with either ASTM C 55, C 73, or C 90, depending upon the unit configuration and application.

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

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

FS159–07/08
Table 721.6.2(3)

Proponent: Matthew Dobson, Vinyl Siding Institute

Revise table as follows:

TABLE 721.6.2(3)
MEMBRANE[a] ON EXTERIOR FACE OF WOOD STUD WALLS

SHEATHING	PAPER	EXTERIOR FINISH
5/8-inch T & G lumber 5/16-inch exterior glue wood structural panel ½-inch gypsum wallboard 5/8-inch gypsum wallboard ½-inch fiberboard	Sheathing paper	Lumber siding Wood shingles and shakes ¼-inch wood structural panels—exterior type ¼-inch hardboard Metal siding Stucco on metal lath Masonry veneer Vinyl Siding
None	—	3/8-inch exterior-grade wood structural panels

For SI: 1 pound/cubic foot = 16.0185 kg/m^2.
a. Any combination of sheathing, paper and exterior finish is permitted.

Reason: Vinyl siding has no negative impact on the performance ability of a fire rated assemblies. This section of the code simply provides a method of specify a fire rated assembly through the use of certain product that have been given certain performance a ability. The exterior finish component to these assemblies under this section does not provide any additional performance. This will enable the building official to understand that vinyl siding can be applied with these assemblies without any effect to the fire rating.

Vinyl siding is accepted in numerous fire rated assemblies and is well recognized for not contributing to the growth of a fire or creating any undue hazard.

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

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

FS160–07/08
Chapter 7; IFC Chapter 7

Proponent: Bill McHugh, Firestop Contractors International Association

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

PART I – IBC FIRE SAFETY

Revise chapter title as follows:

CHAPTER 7
~~FIRE-RESISTANCE-RATED CONSTRUCTION~~
FIRE AND SMOKE PROTECITON FEATURES

PART II – IFC

Revise chapter title as follows:

CHAPTER 7
~~FIRE-RESISTANCE-RATED CONSTRUCTION~~
FIRE AND SMOKE PROTECITON FEATURES

Reason: Fire and smoke protection features better reflects the purpose of this chapter. Fire resistance is very one dimensional, while the chapter demands much more than simple fire resistance, including structural fire resistance, firestop systems that protect for fire and smoke, fire, smoke and fire/smoke dampers that protect against fire and smoke, fire doors, fire rated glazing, etc. Additionally, a fire protection feature may provide sound protection in addition to fire and smoke. Therefore, fire and smoke protection features fits the chapter better.

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

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

FS161–07/08
707

Proponent: Sarah A. Rice, CBO, Schirmer Engineering

1. Revise to read:

CHAPTER 7
~~FIRE-RESISTANCE-RATED~~ CONSTRUCTION OF HORIZONTAL AND VERTICAL ASSEMBLIES

2. Add new text 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.

OPENING. A void in a horizontal or vertical assembly, extending completely through the assembly, creating open ways of passage between adjacent stories, rooms or spaces. Ducts and air transfer openings are not materials that create openings.

PENETRATION. A void in a horizontal or vertical assembly, extending completely through or partially through the assembly, typically created by materials and/or equipment associated with building utilities and/or services. Penetrating items include but are not limited to pipes, tubes, conduit, wire, cable, chimneys and vents. Voids created by ducts, air transfer openings or joints are not penetrations.

3. Revise as follows:

701.1 (2007 Supp) Scope. The provisions of this chapter shall govern the materials, systems and assemblies used in the construction of horizontal and vertical assemblies used to ~~for structural fire resistance and fire-resistance-rated construction separation of~~ separate adjacent spaces ~~to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings~~.

4. Add new text as follows:

704.10 Penetrations. Penetrations of fire-resistance-rated and non fire-resistance-rated exterior walls shall not be required to be protected.

5. Revise to read as follows:

705.9 Penetrations. Penetrations of fire walls shall comply with Section 710 ~~712~~.

706.8 Penetrations. Penetrations of fire barriers shall comply with Section 710 ~~712~~.

706.8.1 Prohibited penetrations. Penetrations ~~into~~ of fire barriers used to enclose an exit enclosure or an exit passageway shall not be allowed except ~~only~~ when permitted by Section 1020.1.2 or 1021.5, respectively.

6. Delete without substitution:

~~SECTION 707 SHAFT ENCLOSURES~~

8. Revise to read as follows:

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

SECTION ~~708~~ 707
FIRE PARTITIONS

708.7 Penetrations. Penetrations of fire-resistance-rated fire partitions shall comply with Section 710 ~~712~~. Penetrations of non-fire-resistance-rated fire partitions shall comply with Section 711.

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

SECTION ~~709~~ 708
SMOKE BARRIERS

709.6 Penetrations. Penetrations of smoke barriers shall comply with Section 710 ~~712~~.

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

SECTION ~~710~~ 709
SMOKE PARTITIONS

710.6 Penetrations and joints. The space around penetrating items into or through smoke partitions, and ~~in~~ joints of smoke partitions shall be filled with an approved material to limit the free passage of smoke.

9. Add new text as follows:

SECTION 710
PENETRATIONS OF FIRE RESISTANCE RATED INTERIOR VERTICAL ASSEMBLIES

710.1 Scope. The provisions of this section shall govern the materials and methods of construction used to protect through penetrations and membrane penetrations of fire resistance-rated interior vertical assemblies.

710.2 ~~712.2~~ Installation of sleeves. (no change to current text)

710.3 ~~712.3.4~~ Dissimilar materials. (no change to current text)

710.5 ~~712.3 (Supp) Fire-resistance rated walls~~ Fire walls, fire-barrier walls, fire partitions and smoke barriers. Through penetrations of fire walls, fire-barriers, fire partitions and smoke barriers required to have a fire-resistance rating shall comply with Sections 710.5.1. Membrane penetrations of fire walls, fire-barriers, and fire partitions required to have a fire-resistance rating shall comply with Sections 710.5.2. ~~Penetrations into or through fire walls, fire-barriers, smoke-barrier walls and fire partitions shall comply with Sections 712.3.1 through 712.3.4. Penetrations in smoke barrier walls shall also comply with 712.5.~~

710.5.1 ~~712.3.1 (Supp)~~ Through penetrations. Through penetrations of fire-resistance-rated fire walls, fire-barriers, fire partitions and smoke barriers shall comply with Section 710.5.1.2 or 710.5.1.3.

Exception: (no change to current text)

710.5.1.2 ~~712.3.1.1~~ Fire-resistance-rated assemblies. Through penetrations of fire-resistance-rated fire walls, fire-barriers, fire partitions and smoke barriers shall be installed as tested in an approved fire-resistance-rated assembly.

710.5.1.3 ~~712.3.1.2~~ Through-penetration firestop system. Through penetrations of fire-resistance-rated fire walls, fire-barriers, fire partitions and smoke barriers shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.

710.5.2 ~~712.3.2 (Supp)~~ Membrane penetrations. Membrane penetrations of fire-resistance-rated fire walls, fire-barriers, fire partitions and smoke barriers shall comply with Section 710.5.1 ~~712.3.1~~. Recessed fixtures in fire-resistance-rated fire walls, fire-barriers, and fire partitions ~~Where walls or partitions are required to have a fire resistance rating~~ shall be installed such that the required fire resistance will not be reduced.

Exceptions 1 - 5: (no change to current text)

710.3.2 ~~712.5~~ Smoke barrier walls. Through penetrations and membrane penetrations of smoke barrier walls shall be tested in accordance with the requirements of UL 1479 for air leakage. The air leakage rate of the penetration assembly shall not exceed 5.0 cfm per square foot ($0.025 m^3/s\ m^2$) of penetration opening at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests.

10. Add new text as follows:

SECTION 711
PENETRATIONS OF NON-FIRE RESISTANCE-RATED INTERIOR VERTICAL ASSEMBLIES

711.1 Scope. The provisions of this section shall govern the materials and methods of construction used to protect through penetrations and membrane penetrations of non-fire resistance-rated interior vertical assemblies,

711.2 Nonfire-resistance rated partitions. Penetrations of non-fire-resistance rated partitions, load bearing and nonloadbearing, shall not be required to be protected, unless otherwise required by the provisions of this code.

711.3 Incidental use area enclosure walls. The space around penetrations of non-fire-resistance rated wall assemblies used to enclose incidental use areas in accordance with Section 508.2.5.2 shall be filled with an approved material to limit the free passage of smoke.

11. Revise to read as follows:

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

SECTION ~~711~~ 712
HORIZONTAL ASSEMBLIES

712.1 ~~711.1 (Supp)~~ General The provisions of this section shall govern the materials and methods used to construct fire-resistance rated and non-fire resistance rated horizontal assemblies (floors and roofs). ~~Floor and roof assemblies required to have a fire-resistance rating shall comply with this section. Nonfire-resistance-rated floor and roof assemblies shall comply with Section 712.4.2~~. Horizontal assemblies required to have a fire-resistance rating shall comply with 712.4. Nonfire-resistance-rated horizontal assemblies ~~floor and roof assemblies~~ shall comply with Section 712.5 ~~712.4.2~~.

712.2 ~~711.2~~ Materials. (no change to current text)

712.3 ~~711.4 (Supp)~~ Continuity. Horizontal assemblies shall be continuous without openings, penetrations or joints except as permitted by this section, Section 713 or Section 1020.1 ~~and Sections 707.2, 712.4, 713 and 1020.1~~. ~~Skylights and other penetrations through a fireresistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fireresistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof construction required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.~~

> ~~**Exception**: In buildings of Type IIB, IIIB or VB construction, the construction supporting the horizontal assembly is not required to be fire-resistance-rated at the following:~~
>
> ~~1. Horizontal assemblies at the separations of incidental uses as specified by Table 508.2, provided the required fire-resistance rating does not exceed 1 hour.~~
> ~~2. Horizontal assemblies at the separations of dwelling units and sleeping units as required by Section 419.3.~~
> ~~3. Horizontal assemblies at smoke barriers constructed in accordance with Section 709.~~

712.4 Fire resistance rated horizontal assemblies. Fire resistance rated horizontal assemblies shall comply with Sections 712.4.1 through 712.4.8.

712.4.1 ~~711.3 (Supp)~~ Fire-resistance rating. (No change to current text)

712.4.2 Supporting construction. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

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

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

712.4.3 ~~711.3.1~~ Ceiling panels. (No change to current text)

712.4.4 ~~711.3.2~~ (Supp) Access doors. (No change to current text)

712.4.5 ~~711.3.3~~ Unusable space. (No change to current text)

712.4.6 Penetrations of horizontal assemblies other than smoke barriers.. Penetrations in other than smoke barriers. shall be protected by a shaft enclosure complying with Section 714.

Exceptions.

1. Penetrations complying with Section 713.
2. A shaft enclosure is not required for penetrations totally within an individual residential dwelling unit and connecting four stories or less.
3. 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*.
4. 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.

712.4.6.1 ~~712.5~~ Penetrations in horizontal smoke barriers. (No change to current text)

712.4.7 Openings in roof/ceiling assemblies. Skylights and other openings through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof construction required to be fire-resistance rated in accordance with Section 704.10.

712.4.8 ~~707.2 (Supp)~~ Openings in floor/ceiling assemblies ~~Shaft enclosure required~~. Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this Section 714 ~~707.~~

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.~~ 3. 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.~~ 4. 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~~. 4.1. Does not connect more than two stories.

~~7.2~~ 4.2. Is not part of the required means of egress system, except as permitted in Section 1020.1.

~~7.3.~~ 4.3 Is not concealed within the building construction.

~~7.4.~~ 4.4 Is not open to a corridor in Group I and R occupancies.

~~7.5.~~ 4.5 . Is not open to a corridor on nonsprinklered floors in any occupancy.

~~7.6.~~ 4.6 . Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.

~~7.7.~~ 4.7 . Is limited to the same smoke compartment.

~~8.~~ 5. 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.~~ 6. 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.~~ 7. 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.~~ 8. Floor openings protected by floor fire doors in accordance with Section 711.8.

~~13.~~ 9. Where permitted by other sections of this code.

~~14.~~ 10. Elevators in open parking garages that serve only the parking garage are not required to be enclosed.

712.4.9 ~~711.6~~ Joints. (No change to current text)

712.4.10 ~~711.7~~ Ducts and air transfer openings. Penetrations in horizontal assemblies by ducts and air transfer openings shall be enclosed in a shaft enclosure which complies with Section 714 or comply with Section 716. Penetrations of horizontal assemblies not protected with a shaft and 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.

Exception: In other than Groups I-2 and I-3, a shaft enclosure is not required for an air transfer opening that complies with the following:

1. Does not connect more than two stories.
2. Is not part of the required means of egress system, except as permitted in Section 1020.1.
3. Is not concealed within the building construction.
4. Is not open to a corridor in Group I and R occupancies.
5. Is not open to a corridor on nonsprinklered floors in any occupancy.
6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
7. Is limited to the same smoke compartment.

~~**71.8 Floor fire door assemblies.** Floor fire door assemblies used to protect openings in fire-resistance-rated floors shall be tested in accordance with NFPA 288, and shall achieve a fire resistance rating not less than the assembly being penetrated. Floor fire door assemblies shall be labeled by an approved agency. The label shall be permanently affixed and shall specify the manufacturer, the test standard and the fire-resistance rating.~~

712.5 Non-fire resistance rated horizontal assemblies. Nonfire resistance rated horizontal assemblies shall comply with Sections 712.5.1 through 712.5.**XXX**.

712.5.1 Penetrations in horizontal assemblies Penetrations in nonfire resistance rated horizontal assemblies shall be protected by a shaft enclosure complying with Section 714.

Exceptions:

1. Penetrations complying with Section 713.
2. A shaft enclosure is not required for penetrations totally within an individual residential dwelling unit and connecting four stories or less.
3. 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*.
4. 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.

712.5.2 Openings in roof/ceiling assemblies. Openings in nonfire-resistance-rated roof/ceiling assemblies shall not be required to be protected.

712.5.3 Openings in floor/ceiling assemblies. Openings through a nonfire-resistance-rated roof/ceiling assemblies floor/ceiling assembly shall be protected by a shaft enclosure complying with this Section 714.

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. In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.
4. 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:
   - 4.1. Does not connect more than two stories.
   - 4.2. Is not part of the required means of egress system, except as permitted in Section 1020.1.
   - 4.3. Is not concealed within the building construction.
   - 4.4. Is not open to a corridor in Group I and R occupancies.
   - 4.5. Is not open to a corridor on nonsprinklered floors in any occupancy.
   - 4.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
   - 4.7. Is limited to the same smoke compartment.
5. 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.
6. A shaft enclosure is not required for floor openings between a mezzanine and the floor below.
7. 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.
8. Where permitted by other sections of this code.
9. Elevators in open parking garages that serve only the parking garage are not required to be enclosed.

712.5.4 Joints. Joints between nonfire-resistance-rated horizontal assemblies, and nonfire-resistance-rated horizontal assemblies and fire-resistance-rated horizontal assemblies, shall not be required to be protected.

712.5.5 Ducts and air transfer openings. Penetrations in horizontal assemblies by ducts and air transfer openings shall be enclosed in a shaft enclosure which complies with Section 714 or comply with Section 716. Penetrations of horizontal assemblies not protected with a shaft and 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.

Exception: In other than Groups I-2 and I-3, a shaft enclosure is not required for an air transfer opening that complies with the following:

1. Does not connect more than two stories.
2. Is not part of the required means of egress system, except as permitted in Section 1020.1.
3. Is not concealed within the building construction.
4. Is not open to a corridor in Group I and R occupancies.

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

12. Revise to read as follows:

SECTION 713 ~~712~~
PENETRATIONS OF HORIZONTAL ASSEMBLIES

713.1 ~~712.1~~ Scope. The provisions of this section shall govern the materials and methods of construction used to protect through penetrations and membrane penetrations of horizontal assemblies ~~and fire-resistance-rated wall assemblies~~. Through penetrations of fire-resistance-rated horizontal assemblies shall comply with Sections 713.3. Membrane penetrations of fire-resistance rated horizontal assemblies shall comply with Section 713.3.2.. Through penetrations of nonfire-resistance-rated horizontal assemblies shall comply with Sections 713.4.

713.2 ~~712.2~~ Installation details. (No change to current text)

713.3 ~~712.4.1 (Supp)~~ Fire-resistance rated horizontal assemblies. Penetrations of the fire-resistance rated floor, floor/ceiling assembly shall comply with Sections 713.3.1 through 713.3.3.

713.3.1 ~~712.4.1.1 (Supp)~~ Through penetrations. (No change to current text)
713.3.1.1 ~~712.4.1.1.1~~ Installation. (No change to current text)
713.3.1.2 ~~712.4.1.1.2~~ Through-penetration firestop system. (No change to current text)
713.3.2 ~~712.4.1.2 (Supp)~~ Membrane penetrations. (No change to current text)

713.4 ~~712.4.2 (Supp)~~ Nonfire-resistance rated horizontal assemblies. Penetrations of nonfire-resistance rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance rated roof/ceiling assembly shall comply with Section 713.4.1 through 713.4.2.

713.4.1 ~~712.4.2.1~~ Noncombustible penetrating items. (No change to current text)
713.4.2 ~~712.4.2.2~~ Penetrating items. (No change to current text)

713.4.3 Membrane penetrations. Penetrations of membranes that are part of a nonfire-resistance-rated horizontal assembly shall not be required to be protected.

13. Add new text as follows:

SECTION 714
SHAFT ENCLOSURES

714.1 General. The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through horizontal assemblies.

714.2 ~~707.1~~ Construction. ~~General.~~ ~~The provisions of this section shall apply to vertical shafts where such shafts are required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies.~~ Shaft enclosures shall be constructed as fire barriers in accordance with Section 706 or horizontal assemblies in accordance with Section 711, or both.

714.3 ~~707.3~~ Materials. (No change to current text)
714.4 ~~707.4~~ Fire-resistance rating. (No change to current text)
714.5 ~~707.5~~ Continuity. (No change to current text)
714.6 ~~707.6~~ Exterior walls. (No change to current text)
714.7 ~~707.7~~ Openings. (No change to current text)
714.7.1 ~~707.7.1~~ Prohibited openings. (No change to current text)
714.8 ~~707.8~~ Penetrations. (No change to current text)
714.8.1 ~~707.8.1~~ Prohibited penetrations. (No change to current text)
714.9 ~~707.9~~ Joints. (No change to current text)
714.10 ~~707.10~~ Ducts and air transfer openings. (No change to current text)
714.11 ~~707.11 (Supp)~~ Enclosure at the bottom. (No change to current text)
714.12 ~~707.12~~ Enclosure at the top. (No change to current text**)**
714.13 ~~707.13~~ Refuse and laundry chutes. (No change to current text)

714.13.1 ~~707.13.1~~ Refuse and laundry chute enclosures. (No change to current text**)**
714.13.2 ~~707.13.2~~ Materials. (No change to current text)
714.13.3 ~~707.13.3 (Supp)~~ Refuse and laundry chute access rooms. (No change to current text)
714.13.4 ~~707.13.4 (Supp)~~ Termination room. (No change to current text)
714.13.5 ~~707.13.5~~ Incinerator room. (No change to current text)
714.13.6 ~~707.13.6~~ Automatic sprinkler system. (No change to current text)
714.14 ~~707.14~~ Elevator, dumbwaiter and other hoistways. (No change to current text)
714.14.1 ~~707.14.1 (Supp)~~ Elevator lobby. (No change to current text)
714.14.2 ~~707.14.2~~ Enclosed elevator lobby pressurization alternative. (No change to current text)
714.14.2.1 ~~707.14.2.1 (Supp)~~ Pressurization requirements. (No change to current text)
714.14.2.2 ~~707.14.4~~ Ducts for system. (No change to current text)
714.14.2.3 ~~707.14.2.3~~ Fan system. (No change to current text)
714.14.2.3.1 ~~707.14.2.3.1~~ Fire resistance. (No change to current text)
714.14.2.3.2 ~~707.14.2.3.2~~ Smoke detection. (No change to current text)
714.14.2.3.3 ~~707.14.2.3.3~~ Separate systems. (No change to current text)
714.14.2.3.4 ~~707.14.2.3.4~~ Fan capacity. (No change to current text)
714.14.2.4 ~~707.14.2.4~~ Standby power. (No change to current text)
714.14.2.5 ~~707.14.2.5~~ Activation of pressurization system. (No change to current text)

14. Add new text as follows:

715.3 Floor fire doors assemblies. Floor fire door assemblies used to protect openings in fire-resistance-rated floors shall be tested in accordance with NFPA 288, and shall achieve a fire-resistance rating not less than the assembly being penetrated. Floor fire door assemblies shall be labeled by an approved agency. The label shall be permanently affixed and shall specify the manufacturer, the test standard and the fire-resistance rating.

15. Revise to read as follows:

715.5 ~~715.4~~ Fire door and shutter assemblies. Approved fire door and fire shutter assemblies in vertical assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Section 715.4.1, 715.4.2 or 715.4.3 and the fire-protection rating indicated in Table 715.5 ~~715.4~~. Fire door assemblies and shutters in vertical assemblies shall be installed in accordance with the provisions of this section and NFPA 80.

Exception~~s~~:

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

(Entire section relocated from Section 713 and renumbered to Section 715)

SECTION ~~713~~ 715
FIRE-RESISTANT JOINT SYSTEMS

(Entire section relocated from Section 714 and renumbered to Section 716)

SECTION ~~714~~ 716
FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS

(Entire section relocated from Section 715 and renumbered to Section 717)

SECTION ~~715~~ 717
OPENING PROTECTIVES

(Entire section relocated from Section 716 and renumbered to Section 718)

SECTION ~~716~~ 718
DUCTS AND AIR TRANSFER OPENINGS

(Entire section relocated from Section 717 and renumbered to Section 719)

SECTION ~~717~~ 719
CONCEALED SPACES

(Entire section relocated from Section 718 and renumbered to Section 720)

SECTION ~~718~~ 720
FIRE-RESISTANCE REQUIREMENTS FOR PLASTER

(Entire section relocated from Section 719 and renumbered to Section 721)

SECTION ~~719~~ 721
THERMAL-AND SOUND-INSULATING MATERIALS

(Entire section relocated from Section 720 and renumbered to Section 722)

SECTION ~~720~~ 722
PRESCRIPTIVE FIRE RESISTANCE

(Entire section relocated from Section 721 and renumbered to Section 723)

SECTION ~~721~~ 723
CALCULATED FIRE RESISTANCE

Reason: The current arrangement of the code sections which regulate penetrations of horizontal assemblies is relatively accepted as being unworkable, often creating what are best described as do-loops. The user is forced to move back and forth between sections that though connected are not placed in a rational order.

The primary intent of this proposal is to re-organize the existing materials that are currently found in Chapter 7 relative to vertical and horizontal assemblies and place them in a workable fashion. This entails rearranging, reformatting and relocation current sections. When complete the format will be as follows:

701 General
702 Definitions
703 Fire Resistance Ratings and Fire Tests
704 Exterior Walls
705 Fire Walls
706 Fire Barriers
707 Fire Partitions
708 Smoke Barriers
709 Smoke Partitions
710 Penetrations Of Fire Resistance Rated Interior Vertical Assemblies (New)
711 Penetrations Of Non-Fire Resistance Rated Interior Vertical Assemblies (New)
712 Horizontal Assemblies
713 Penetrations of Horizontal Assemblies (New)
714 Shaft Enclosures (New)
715 Fire Resistive Joints
716 Fire Resistance Rating of Structural Members
717 Opening Protectives
718 Duct and Air Transfer Openings
719 Concealed Spaces
720 Fire Resistance requirements for plaster
721 Thermal and Sound insulating materials
722 Prescriptive Fire Resistance
723 Calculated Fire Resistance

While the majority of this proposal does not contain any technical revisions. New provisions are introduced in New Section 712 Penetration of Non-Fire Resistance Rated Interior Vertical Assemblies. The code has been noticeable silent on how to address penetrations in non-fire rated wall assemblies. The proposed language gives specific direction on how penetrations are to be addressed.

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

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

FS162–07/08
Chapter 7

Proponent: Gregory R Keith, Professional heuristic Development, representing The Boeing Company and Ron Clements, Chesterfield County, Virginia

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

PART I – IBC GENERAL

Delete entire Section and relocate to Chapter 7, Section 715.8.3 (new):

~~**SECTION 404**~~
~~**ATRIUMS**~~

(Renumber subsequent sections)

1. Revise as follows:

TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ~~ELEMENTS~~
ASSEMBLIES BASED ON TYPE OF CONSTRUCTION

BUILDING ~~ELEMENT~~ ASSEMBLY (Remainder of table to remain unchanged)

PART II – IBC FIRE SAFETY

Revise as follows:

702.1 Definitions. (Definitions not shown to remain unchanged.)

OPENING. A breach in a building assembly that is necessary for utility, egress or architectural purposes.

BUILDING ASSEMBLY. An element of building construction as indicated in Table 601. Building assemblies are comprised of one or more construction components.

~~**BUILDING ELEMENT.** A fundamental component of building construction, listed in Table 601, which may or may not be of fire-resistance-rated construction and is constructed of materials based on the building type of construction.~~

FIRE-RESISTANCE RATING. The period of time that a building ~~element, component or~~ assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703.

HORIZONTAL ASSEMBLY. A fire-resistance-rated floor or roof building assembly based on building type of construction requirements and which is designed to perform a given structural function ~~of materials designed to restrict the spread of fire in which continuity is maintained~~.

HORIZONTAL BARRIER. A fire-resistance-rated floor building assembly wherein openings are protected and which is designed to maintain the ability to confine a fire and to perform a given structural function.

SHAFT ENCLOSURE. An enclosure for an opening that serves utility purposes such as, accommodating electrical, mechanical. plumbing equipment and elevator hoistways ~~The walls or construction forming the boundaries of a shaft.~~

EXIT ENCLOSURE. An enclosure for an opening that serves means of egress or human movement purposes such as stairways and ramps. An exit component that is separated from other interior spaces of a building or structure by fire-resistance rated construction and opening protectives, and provides for a protected path of egress travel in a vertical or horizontal direction to the exit discharge or the public way.

~~**ATRIUM.** An opening connecting two or more stories other than enclosed stairways, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with Section 505.~~

ATRIUM ENCLOSURE. An enclosure for an opening that serves functional or aesthetic purposes such as atria, escalators and air transfer openings.

AIR TRANSFER OPENING. An unducted opening designed to allow the movement of environmental air between two contiguous spaces.

FIRESTOP. A material, device or construction installed to maintain the fire-resistance rating required for a building assembly.

FLAMESTOP. A material, device or construction installed to resist the free passage of flame and products of combustion in nonfire-resistance rated building assemblies.

JOINT. The linear opening in or between adjacent fire-resistance rated building assemblies that is designed to allow for independent movement of the building in any plane ~~caused by thermal, seismic, wind or any other loading~~.

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

FIRE AREA. The aggregate floor area enclosed and bounded by fire walls, fire barriers, horizontal barriers or exterior walls ~~or fire-resistance-rated horizontal assemblies~~ of a building.

FIRE ZONE. A fire-resistance rated or nonfire-resistance rated envelope of building construction intended to restrict the spread of fire or flame, and in which, continuity is maintained.

OPENING PROTECTIVE ASSEMBLY. A listed device installed in a building assembly that is designed to confine a fire or to resist the spread of fire for a prescribed period of time. Opening protective assemblies include fire door assemblies, fire window assemblies, fire dampers, ceiling dampers, smoke dampers, through-penetration fire stops and fire-resistant joint systems.

(Section 703 to remain without changes)

(Entire section relocated from Section 720 and renumbered to Section 704)

SECTION ~~720~~ 704
PRESCRIPTIVE FIRE RESISTANCE

(Entire section relocated from Section 721 and renumbered to Section 705)

SECTION ~~721~~ 705
CALCULATED FIRE RESISTANCE

(Entire section relocated from Section 704 and renumbered to Section 706)

SECTION ~~704~~ 706
EXTERIOR WALLS

(Entire section relocated from Section 705 and revised as follows)

~~704.8.2~~ 706.8.2 (Supp) Protected openings. Where openings are required to be protected, fire doors and fire shutters shall comply with Section ~~715.4~~ 715.6.1 and fire window assemblies shall comply with Section ~~715.5~~ 715.6.2.

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 water curtain using automatic sprinklers approved for that use.

~~704.9~~ **706.9 (Supp) Joints.** Joints made in or between exterior walls required by this section to have a fire-resistance rating shall comply with Section ~~713~~ 715.6.7.

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

~~704.9.1~~ **706.9.1 (Supp) Voids.** 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~~ 715.6.7.

~~704.10~~ **706.10 (Supp) Ducts ~~and air transfer openings~~.** Penetration by air ducts ~~and air transfer openings~~ in fire-resistance rated exterior walls required to have protected openings shall be protected in accordance ~~comply~~ with Section ~~716~~ 715.6.3.

Exception: Foundation vents installed in accordance with this code are permitted.

SECTION ~~705~~ 707
FIRE WALLS

(Renumber Sections 705.1 through 705.7 to 707.1 through 707.7 respectively without any other changes)

~~705.8~~ **707.8 Openings.** Each opening through a fire wall shall be protected in accordance with Section ~~715.4~~ 715.5.2.2 and shall not exceed 156 square feet (15 m^2). 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 156 square feet (15 m^2) where both buildings are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

~~**705.9 Penetrations.** Penetrations of fire walls shall comply with Section 712.~~

~~**705.10 Joints.** Joints made in or between fire walls shall comply with Section 713.~~

~~**705.11 Ducts and air transfer openings (supp).** 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 Section 716. The size and aggregate width of all openings shall not exceed the limitations of Section 705.8.~~

(Entire section relocated from Section 706 and revised as follows)

SECTION ~~706~~ 708
FIRE BARRIERS

(Renumber Sections 706.1 through 706.6 to 708.1 through 708.6 respectively without any other changes)

~~706.7~~ **708.7 Openings.** Openings in a fire barrier shall be protected in accordance with Section 715.5.2.2. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m^2). ~~Openings in 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 m^2) where adjoining floor areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door serving an exit enclosure.
3. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective assembly has been tested in accordance with ASTM E 119 or UL 263 and has a minimum fire-resistance rating not less than the fire-resistance rating of the wall.
4. Fire window assemblies permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of length of the wall.

~~**706.7 Penetrations.** Penetrations of fire barriers shall comply with Section 712.~~

~~**706.7.1 Prohibited penetrations.** Penetrations into an exit enclosure or an exit passageway shall be allowed only when permitted by Section 1020.1.2 or 1021.5, respectively.~~

~~**706.8 Joints.** Joints made in or between fire barriers shall comply with Section 713.~~

~~**706.9 Ducts and air transfer openings.** Penetrations in a fire barrier by ducts and air transfer openings shall comply with Section 716.~~

Delete Section 707 in its entirety and substitute with proposed Section 715 (see below).

~~SECTION 707~~
~~SHAFT ENCLOSURES~~

(Entire section relocated from Section 708 and revised as follows)

SECTION ~~708~~ 709
FIRE PARTITIONS

(Renumber Sections 708.1 through 708.5 to 709.1 through 709.5 respectively without any other changes)

~~708.6~~ 709.6 Openings. Openings in a fire partition shall be protected in accordance with Section 715.5.2.2.

~~**708.7 Penetrations.** Penetrations of fire partitions shall comply with Section 712.~~

~~**708.8 Joints.** Joints made in or between fire partitions shall comply with Section 713.~~

~~**708.9 Ducts and air transfer openings.** Penetrations in a fire partition by ducts and air transfer openings shall comply with Section 716.~~

(Entire section relocated from Section 709 and revised as follows)

SECTION ~~709~~ 710
SMOKE BARRIERS

(Renumber Sections 709.1 through 709.4 to 710.1 through 710.4 respectively without any other changes)

~~709.5~~ 710.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section ~~715~~ 715.5.2.2.

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

~~**709.6 Penetrations.** Penetrations of smoke barriers shall comply with Section 712.~~

~~**709.7 Joints.** Joints made in or between smoke barriers shall comply with Section 713.~~

~~**709.8 Ducts and air transfer openings.** Penetrations in a smoke barrier by ducts and air transfer openings shall comply with Section 716.~~

(Entire section relocated from Section 710 and revised as follows)

SECTION ~~710~~ 711
SMOKE PARTITIONS

(Renumber Sections 710.1 through 710.5.2 to 711.1 through 711.5.2 respectively without any other changes)

~~710.5.3~~ **711.5.3 Self- or automatic-closing doors.** Where required elsewhere in the code, doors in smoke partitions shall be self- or automatic closing by smoke detection in accordance with Section ~~715.4.7.3~~ 715.6.1.5.1.

(Renumber Section 710.6 to 711.6 without any other changes)

~~710.7~~ **711.7 Ducts and air transfer openings.** The space around a duct penetrating a smoke partition shall be filled with an approved material to limit the free passage of smoke. Air transfer openings in smoke partitions shall be provided with a smoke damper complying with Section ~~716.3.2~~ 715.6.5.1.

Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.

(Entire section relocated from Section 711 and revised as follows)

SECTION ~~711~~ 712
HORIZONTAL ASSEMBLIES

(Renumber Sections 711.1 and 711.2 to 712.1 and 712.2 respectively without any other changes)

~~711.3~~ **712.3 Fire-resistance rating.** Horizontal assemblies shall have a ~~The~~ fire-resistance rating ~~of floor and roof assemblies shall~~ not be less than that required by Table 601 based on the building type of construction. ~~Where the floor assembly separates mixed occupancies, the assembly shall have a fire-resistance rating of not less than that required by Section 508.3.3 based on the occupancies being separated. Where the floor assembly separates a single occupancy into different fire areas, the assembly shall have a fire-resistance rating of not less than that required by Section 706.3.9. Horizontal assemblies separating dwelling units in the same building and horizontal assemblies separating sleeping units in the same building shall be a minimum of 1-hour fire-resistance-rated construction.~~

~~**Exception:** Dwelling unit and sleeping unit separations in buildings of Types IIB, IIIB, and VB construction shall have fire-resistance ratings of not less than 1/2 hour in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.~~

~~711.4~~ **712.4 ~~Continuity~~ Openings.** Openings in horizontal assemblies shall be protected in accordance with Section 715.3.2 ~~Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 707.2, 712.4, 713 and 1020.1.~~ Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof construction required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

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

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

(Delete Sections 712 and 713 in their entirety and substitute with Section 715, see below)

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

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

2. Add new text as follows:

SECTION 713
HORIZONTAL BARRIERS

713.1 General. Where required by other provisions of this code, horizontal barriers shall comply with this section.

713.2 Materials. Horizontal barriers shall be constructed of materials consistent with those permitted for the type of construction of the building in accordance with Section 602.2-5.

713.3 Fire-resistance rating. Horizontal barriers shall have a fire-resistance rating not less than that required by Table 601 based on the building type of construction and as required elsewhere in this code. Construction supporting a horizontal barrier shall be protected so as to provide the required fire-resistance rating of such horizontal barrier.

Horizontal barriers separating dwelling units in the same building and horizontal barriers separating sleeping units in the same building shall be a minimum of 1-hour fire-resistance-rated construction.

Exception: Dwelling unit and sleeping unit separations in buildings of Types IIB, IIIB, and VB construction shall have fire-resistance ratings of not less than 1/2 hour in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

713.4 Openings. Openings in horizontal barriers shall be protected in accordance with Section 713.3.3.

(Section 714 to remain without changes)

(Delete Sections 715 its their entirety and substitute with new Section 715 see below)

~~**SECTION 715**~~
~~**OPENING PROTECTIVES**~~

SECTION 715
PROTECTION OF OPENINGS

715.1 General. Openings in building assemblies shall be protected in accordance with the provisions of this section.

715.1.1 Unconcealed openings. Where required to be protected, openings that are not concealed within building construction shall be enclosed by fire-resistance rated construction or protected by an opening protective assembly.

Exceptions:

1. Openings totally within an individual dwelling unit and connecting four stories or less.
2. Openings in Group S-2 open and enclosed parking garages that serve only the parking structure.
3. Openings in Group A-5 occupancies that are essentially open to the outdoors.

715.1.2 Concealed openings. Openings that are concealed within building construction shall be protected in accordance with Section 714.

Exception: Openings within enclosures constructed in accordance with Section 715.8.

715.2 Fire zones. Fire zones shall include those contiguous building areas not separated by fire walls, fire barriers or horizontal barriers. Areas so separated shall be considered separate fire zones. Enclosures in accordance with Section 715.8 and exit passageways in accordance with Section 1021 shall not be considered separate fire zones; however, the protection of openings shall be required between such areas and the fire zones in which they are located. Areas isolated by fire partitions shall not be considered separate fire zones; however, the protection of openings shall be required between such areas and the fire zones in which they are located.

Fire zones shall be permitted to extend vertically and include intercommunicating stories in accordance with Table 715.2. Openings that are not concealed within building construction and serve the indicated number of adjacent stories are not required to be enclosed or protected provided such interconnected stories do not communicate with additional stories, other fire zones or tenant spaces in a fire event.

Exception: Fire zones more than two stories above grade plane shall be served by at least one exit enclosure that extends to the exterior of the building or all points of the fire zone shall be within 300 feet (91,440 mm) of an exit enclosure. The primary purpose of such exit enclosure is to provide protected fire department access to upper building levels. Exit enclosures provided to satisfy means of egress design requirements shall also qualify as fire department access enclosures.

The total height of communicating stories within a given fire zone shall not exceed 50 feet. Stories, as used in this section, shall include basements, but not include balconies in Group A occupancies or mezzanines that comply with Section 505.

TABLE 715.2
ALLOWED NUMBER OF INTERCOMMUNICATING STORIES WITHIN FIRE ZONES

OCCUPANCY	NUMBER OF STORIES	SPRINKLER SYSTEM	MECHANICAL SMOKE CONTROL[A]
Group A, B, E, F, M, R, S or U	2	3[b]	4[c]
Group H or I	1	1	1

a. In other than Group H occupancies, unlimited intercommunicating stories are permitted where buildings comply with the provisions of Section 715.8.3.6.
b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and a mechanical smoke control system in accordance with Section 909 within the applicable fire zone.

715.3 Floor, floor/ceiling construction. Openings in floors or floor/ceiling construction shall be protected in accordance with the provisions of this section. Structural members supporting floor, floor/ceiling construction that is a portion of a fire zone shall be protected consistent with the supported construction. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly. Flexible air connectors shall not pass through any floor.

715.3.1 Building assemblies. Openings in nonfire-resistance rated floor/ceiling construction that is not a portion of a fire zone envelope shall not require protection unless required by other provisions of this code. Openings in nonfire-resistance rated floor/ceiling construction that is a portion of a fire zone envelope shall be protected in accordance with Section 715.7 or enclosed in accordance with Section 715.8.

715.3.2 Horizontal assemblies. Openings in horizontal assemblies that are not a portion of a fire zone envelope shall not require protection other than as necessary to maintain the integrity of the assembly itself unless required by other provisions of this code. Openings in horizontal assemblies that are a portion of a fire zone envelope shall be protected with opening protective assemblies in accordance with Sections 715.6.1 through 715.6.6 or enclosed in accordance with Sections 715.8.

715.3.3 Horizontal barriers. Openings in horizontal barriers shall be protected with opening protective assemblies in accordance with Sections 715.6.1 through 715.6.6 or enclosed in accordance with Section 715.8.

715.4 Roof, roof/ceiling construction. Openings in roofs or roof/ceiling construction shall be protected in accordance with the provisions of this section. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly. Flexible air connectors shall not pass through any ceiling.

Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof construction required to be fire-resistance rated in accordance with Section 704.10.

715.5 Wall construction. Openings in fire-resistance rated wall construction shall comply with the provisions of this section. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly. Flexible air connectors shall not pass through any wall.

715.5.1 Exterior walls. Openings in bearing and nonbearing exterior walls shall be protected in accordance with Section 706.8.

715.5.2 Interior walls. Openings in bearing and nonbearing interior walls shall be protected in accordance with the provisions of this section.

715.5.2.1 Building assemblies. Openings in interior bearing walls required to have a fire-resistance rating by Table 601 shall not require protection other than as necessary to maintain the integrity of the assembly itself unless required by other provisions of this code.

715.5.2.2 Fire walls, fire barriers and fire partitions. Openings in fire walls, fire barriers and fire partitions shall be protected in accordance with the provisions this section.

715.5.2.2.1 Doors. Door openings shall be protected in accordance with Section 715.6.1.

715.5.2.2.2 Windows. Window openings shall be protected in accordance with Section 715.6.2. Window openings in fire walls shall not be permitted.

Exceptions:

1. Fire-resistance-rated glazing tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119 or UL 263 and labeled in accordance with Section 703.5 shall be permitted in fire doors and fire window assemblies in accordance with their listings.
2. Glazing protected by fire door assemblies.

715.5.2.2.3 Ducts. Duct openings shall be protected in accordance with Sections 715.6.3, 715.6.4 and 715.6.5.

Exceptions:

1. In other than Group H occupancies, fire dampers are not required in fire barriers where any of the following apply:
   - 1.1. In other than Group H occupancies, in ducted HVAC systems where fire barriers have a required fire-resistance rating of 1 hour or less and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.
   - 2. In other than Group H occupancies, fire dampers are not required in fire partitions where any of the following apply:
     - 2.1. The fire 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 715.6.5.
     - 2.2. Tenant partitions in covered mall buildings where the fire partitions are not required to extend to the underside of the floor or roof deck above by other provisions of this code.
     - 2.3. The duct system is constructed of approved materials in accordance with the *International Mechanical Code* and the duct penetrating the fire partition 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 between the corridor and 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 1½-inch by 1½-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.

715.5.2.2.4 Penetrations. Through-penetrations and membrane-penetrations shall be protected in accordance with Section 715.6.5.

715.5.2.2.5 Joints. Joints in shall be protected in accordance with Section 715.6.6.

715.6 Opening protective assemblies. Opening protective assemblies required by other provisions of this code shall comply with the provisions of this section.

The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252,
NFPA 257 or UL 9. The required fire resistance of an opening protective shall be permitted to be established by any of the following methods or procedures:

1. Designs documented in approved sources.
2. Calculations performed in an approved manner.

3. Engineering analysis based on a comparison of opening protective designs having fire-protection ratings as determined by the test procedures set forth in NFPA 252, NFPA 257 or UL 9.
4. Alternative protection methods as allowed by Section 104.11.

The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in referenced test standards.

715.6.1 Fire door assemblies. Fire door assemblies shall comply with the provisions of this section. Fire door assemblies shall be constructed of any material or assembly of materials that conforms to the test requirements of Section 715.6.1.1, 1-3. Fire shutters shall comply with the provisions for fire doors.

Exceptions:

1. Labeled fire door assemblies that conform to the requirements of this section or UL10A, UL14B and UL 14C for tin-clad fire door assemblies.
2. Floor fire door assemblies in accordance with this section.

715.6.1.1 Fire protection rating. Fire door assemblies shall have the fire protection rating indicated in Table 715.6.1.

Exceptions:

1. Corridor door assemblies in Group I-2 occupancies shall be in accordance with Section 407.3.1.
2. Unprotected openings shall be permitted for corridors in multitheater complexes where each motion picture auditorium has at least one-half of its required exit or exit access doorways opening directly to the exterior or into an exit passageway.
3. Floor fire door assemblies used to protect openings in horizontal assemblies and horizontal barriers shall have a fire-resistance rating not less than the assembly being penetrated.

3. Revise as follows:

TABLE ~~715.4~~ 715.6.1
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS

(No change to table entries)

4. Add new text as follows:

715.6.1.2 Testing. Fire door assemblies shall be tested in accordance with NFPA 252, UL 10B or UL 10C, as specified below.

Fire door assemblies with side-hinged and pivoted swinging doors shall be tested in accordance with NFPA 252 or UL 10C. After 5 minutes into the NFPA 252 test, the neutral pressure level in the furnace shall be established at 40 inches (1016 mm) or less above the sill.

Fire door assemblies with other types of doors, including swinging elevator doors and fire shutter assemblies, shall be tested in accordance with NFPA 252 or UL 10B. The pressure in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible. Once established, the pressure shall be maintained during the entire test period.

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

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

Fire door assemblies located in corridor walls or smoke-barrier walls and required to have a minimum fire protection rating of 20 minutes in accordance with Table 715.6.1 shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test. Such smoke and draft control assemblies shall also be tested in accordance with UL 1784. Louvers are prohibited.

Exception: View ports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have at least a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700°F (927°C) shall be permitted.

Floor fire door assemblies used to protect openings in fire-resistance-rated floors shall be tested in accordance with NFPA 288.

715.6.1.3 Labeling. Fire door assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80 and shall be permanently affixed to the door or frame. The label shall be applied at the factory or location where fabrication and assembly are performed. Fire door labels shall include the name of the manufacturer, the name of the third-party inspection agency, the fire protection rating, and where required for fire doors used in exit enclosures and exit passageways, the maximum transmitted temperature end point. Fire door frames shall be labeled showing the name of the manufacturer or other identification readily traceable back to the manufacturer and the name or trademark of the third-party inspection agency, the fire protection rating and, where required for fire doors in exit enclosures and exit passageways by Section 715.6.1.2, the maximum transmitted temperature end point.

Smoke and draft control assemblies complying with UL 1784 shall be labeled and shall show the letter "S" on the fire protection rating label of the door. This marking shall indicate that the door and frame assembly are in compliance when listed or labeled gasketing is also installed.

Oversized fire door assemblies shall bear an oversized fire door label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. When a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the door conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.

Floor fire door assemblies shall be labeled by an approved agency. The label shall be permanently affixed and shall specify the manufacturer, the test standard and the fire-resistance rating.

715.6.1.4 Installation. Fire door assemblies shall be installed in accordance in accordance with NFPA 80. Smoke and draft control assemblies shall be installed in accordance with NFPA 105.

715.6.1.5 Closing. Fire door assemblies shall be self- or automatic-closing in accordance with this section.

Exceptions:

1. Fire door assemblies located in walls separating sleeping units in Group R-1 occupancies shall be permitted without self- or automatic-closing devices.
2. The elevator car doors and the associated hoistway enclosure doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation.

Unless otherwise permitted, single fire door assemblies and both leaves of pairs of side-hinged swinging fire door assemblies shall be provided with an active latch bolt that will secure the door when it is closed.

715.6.1.5.1 Smoke-activated doors. Automatic-closing doors installed in the following locations shall be automatic-closing by the actuation of smoke detectors installed in accordance with Section 907.10 or by loss of power to the smoke detector or hold-open device. Doors that are automatic-closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated:

1. Doors installed across a corridor.
2. Doors that protect openings in exits or corridors required to be of fire-resistance-rated construction.
3. Doors that protect openings in walls that are capable of resisting the passage of smoke in accordance with Section 508.2.2.1.
4. Doors installed in smoke barriers in accordance with Section 910.5.
5. Doors installed in fire partitions in accordance with Section 709.6.
6. Doors installed in a fire wall in accordance with Section 707.8.
7. Doors installed in shaft enclosures in accordance with Section 715.8.1.
8. Doors installed in refuse and laundry chutes and access and termination rooms in accordance with Section 715.8.1.2.3.
9. Doors installed in the walls for compartmentation of underground buildings in accordance with Section 405.4.2.
10. Doors installed in the elevator lobby walls of underground buildings in accordance with Section 405.4.3.
11. Doors installed in smoke partitions in accordance with Section 911.5.

715.6.1.5.2 Fire shutters and steel fire doors. Vertical sliding or vertical rolling steel fire door assemblies in openings through which pedestrians travel shall be heat activated or activated by smoke detectors with alarm verification.

Where fire shutters of the rolling type are installed, such shutters shall include approved automatic-closing devices.

Where fire shutters of the swinging type are installed in exterior openings, not less than one row in every three vertical rows shall be arranged to be readily opened from the outside, and shall be identified by distinguishing marks or letters not less than 6 inches (152 mm) high.

715.6.1.6 Glazing. Fire-protection-rated glazing shall be permitted in fire door assemblies in accordance with NFPA 80.

Fire-protection-rated glazing in fire door assemblies located in fire walls are prohibited.

Exception: Where serving as a horizontal exit, a self-closing swinging fire door assembly shall be permitted to have a vision panel of not more than 100 square inches (0.065 m^2) without a dimension exceeding 10 inches (254 mm).

Fire-protection-rated glazing shall not be installed in fire door assemblies having a 1½-hour fire protection rating intended for installation in fire barriers.

Exception: Glazing not more than 100 square inches (0.065 m^2) in area.

Fire-protection-rated glazing in excess of 100 square inches (0.065 m2) shall be permitted in fire door assemblies when tested as components of the door assemblies and not as glass lights, and shall have a maximum transmitted temperature rise of 450◦F (250◦C) in accordance with Section 715.6.1.2.

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

Fire-protection-rated glazing in smoke and draft control assemblies shall have a minimum fire-protection rating of 20 minutes and shall be exempt from the hose stream test. Glazing material in any other part of the door assembly, including transom lites and sidelites, shall be tested in accordance with NFPA 257 and UL 9, including the hose stream test, in accordance with Section 715.6.2.

715.6.1.6.1 Labeling. Fire-protection-rated glazing in fire door assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80 and shall be permanently affixed to the glazing. The label shall be applied at the factory or location where fabrication and assembly are performed. For fire-protection-rated glazing, the label shall include the name of the manufacturer, the test standard and shall bear the following four-part identification: "D – H or NH – T or NT – XXX." "D" indicates that the glazing shall be used in fire door assemblies and that the glazing meets the fire containment requirements of the NFPA 257 and UL 9. "H" shall indicate that the glazing meets the hose stream requirements of the test standard. "NH" shall indicate that the glazing does not meet the hose stream requirements of the test. "T" shall indicate that the glazing meets the temperature requirements of Section 715.6.1.2. "NT" shall indicate that the glazing does not meet the temperature requirements of Section 715.6.1.2. The placeholder "XXX" shall specify the fire-protection-rating period, in minutes, as tested.

715.6.1.6.1 Installation. Wired glass used in fire door assemblies shall comply with Table 715.6.2.1. Other fire-protection-rated glazing shall comply with the size limitations of NFPA 80.

Approved fire-protection-rated glazing used in fire door assemblies in elevator and exit enclosures shall be so located as to furnish clear vision of the passageway or approach to the elevator, ramp or stairway.

Fire-protection-rated glazing installed in fire door assemblies or fire window assemblies in areas subject to human impact in hazardous locations shall comply with Chapter 24.

715.6.2 Fire window assemblies. Fire window assemblies shall comply with the provisions of this section.

Exception: Glazing tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119.

Fire window assemblies shall be limited to fire partitions in accordance with Section 708 and fire barriers utilized in the applications set forth in Sections 706.3.6 and 706.3.8 where the fire-resistance rating does not exceed 1 hour.

Glazing installed in fire door assemblies shall comply with Section 715.6.1.6.

715.6.2.1 Fire protection rating. Fire window assemblies shall have the fire protection rating indicated in Table 715.6.2. Metal mullions that exceed a nominal height of 12 feet (3658 mm) shall be protected with materials to afford the same fire-resistance rating as required for the wall construction in which the fire window assembly is located.

Exceptions:

1. Steel window frame assemblies of 0.125-inch (3.2 mm) minimum solid section or of not less than nominal 0.048-inch-thick (1.2 mm) formed sheet steel members fabricated by pressing, mitering, riveting, interlocking or welding and having provision for glazing with ¼-inch (6.4 mm) wired glass where securely installed in the building construction and glazed with ¼-inch (6.4 mm) labeled wired glass shall be deemed to meet the requirements for a ¾-hour fire window assembly. Wired glass panels shall conform to the size limitations set forth in Table 715.6.2.1.

2. Fire window assemblies in 0.5-hour fire-resistance-rated partitions are permitted to have a 20 minute fire protection rating.

5. Revise table as follows:

TABLE ~~715.5~~ 715.6.2
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY		REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:	Fire walls	All	NP [a]
	Fire barriers	> 1 1	NP [a] 3/4
	Smoke barriers	1	3/4
	Fire partitions	1 1/2	3/4 1/3
Exterior walls[b]		> 1 1	1 1/2 3/4
Party wall		All	NP

NP = Not Permitted.

a. Not permitted except as specified in Section 715.2.

b. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 706.3, 706.8.2, 706.8.5 or 706.8.6 shall have a fire-protection rating of not less than ¾ hour.

TABLE ~~715.5.3~~ 715.6.2.1
LIMITING SIZES OF WIRED GLASS PANELS

(No change to table entries)

6. Add new text as follows:

715.6.2.2 Testing. Fire window assemblies shall be tested in accordance with NFPA 257 and UL 9.

NFPA 257 AND UL 9 shall evaluate fire window assemblies under positive pressure. Within the first 10 minutes of a test, the pressure in the furnace shall be adjusted so at least two-thirds of the test specimen is above the neutral pressure plane, and the neutral pressure plane shall be maintained at that height for the balance of the test.

Nonsymmetrical glazing systems in fire partitions, fire barriers or in exterior walls with a fire separation distance of 5 feet (1524 mm) or less in accordance with Section 704 shall be tested with both faces exposed to the furnace, and the assigned fire protection rating shall be the shortest duration obtained from the two tests conducted in compliance with NFPA 257 AND UL 9.

715.6.2.3 Labeling. Fire windows shall be labeled by an approved agency. The labels shall comply with NFPA 80 and shall be permanently affixed to the glazing. The label shall be applied at the factory or location where fabrication and assembly are performed. Fire window labels shall include the name of the manufacturer, the test standard and shall bear the following two-part identification: "OH – XXX." "OH" indicates that the glazing meets both the fire containment and the hose-stream requirements of NFPA 257 and UL 9. "XXX" represents the fire-protection rating period, in minutes, as tested.

715.6.2.4 Installation. Fire window assemblies shall be installed in approved frames in a fixed position or be automatic-closing.

715.6.3 Fire dampers. Fire dampers shall comply with the provisions of this section.

Exceptions:

1. Openings included as part of a fire-resistance-rated wall assembly tested in accordance with ASTM E 119.
2. Where 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.

Where a building assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required.

Fire dampers for hazardous exhaust duct systems shall comply with the *International Mechanical Code*.

715.6.3.1 Fire protection rating. Fire dampers shall have the fire protection rating indicated in Table 715.6.3.

7. Revise as follows:

TABLE ~~716.3.1~~ 715.6.3
FIRE DAMPER FIRE PROTECTION RATINGS

(No change to table entries)

8. Add new text as follows:

715.6.3.2 Testing. Fire dampers shall be tested in accordance with UL 555. Combination fire/smoke dampers shall be tested in accordance with both UL 555 and UL 555S.

715.6.3.3 Labeling. Fire dampers shall be labeled by an approved agency.

Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire event.

715.6.3.4 Installation. The fire damper actuating device shall meet one of the following requirements:

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

Fire dampers shall be provided with an approved means of access, which is large enough to permit inspection and maintenance of the damper and its operating parts. The access openings shall not reduce the fire-resistance rating of the building assembly. Access points shall be permanently identified on the exterior by a label having letters not less than 0.5 inch (12.7 mm) in height reading: FIRE DAMPER or FIRE/SMOKE DAMPER. Access doors in ducts shall be tight fitting and suitable for the required duct construction.

Fire dampers and combination fire/smoke dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the manufacturer's installation instructions and the dampers' listing.

715.6.4 Ceiling radiation dampers. Ceiling radiation dampers shall comply with the provisions of this section and the applicable provisions of Section 715.6.3.

Exception: Ceiling radiation dampers are not required where either of the following applies:

1. Where tests in accordance with ASTM E 119 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 715.6.5, are located within the cavity of a wall and do not pass through another dwelling unit or tenant space.

715.6.4.1 Fire protection rating. Ceiling radiation dampers shall be installed in accordance with their listing.

715.6.4.2 Testing. Ceiling radiation dampers shall be tested in accordance with UL 555C. Ceiling radiation dampers shall be tested in accordance with UL 555C and installed in accordance with the manufacturer's installation instructions and listing.

715.6.4.3 Labeling. Ceiling radiation dampers shall be labeled by an approved agency.

715.6.4.4 Installation. Ceiling radiation dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the manufacturer's installation instructions and the dampers' listing.

715.6.5 Smoke dampers. Smoke dampers shall comply with the provisions of this section. Where a building assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be required.

715.6.5.1 Leakage rating. Smoke damper leakage ratings shall not be less than Class II. Elevated temperature ratings shall not be less than 250°F (121°C).

715.6.5.2 Testing. Smoke dampers shall comply with the requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S.

715.6.5.3 Labeling. Smoke dampers shall be listed and bear the label of an approved testing agency indicating compliance with the referenced standards in this section.

715.6.5.4 Installation. Smoke dampers and combination fire/smoke dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the manufacturer's installation instructions and the dampers' listing.

Smoke dampers shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

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

Smoke dampers shall be provided with an approved means of access, which is large enough to permit inspection and maintenance of the damper and its operating parts. The access openings shall not reduce the fire-resistance rating of the building assembly. The access shall not affect the integrity of fire-resistance-rated building assemblies. Access points shall be permanently identified on the exterior by a label having letters not less than 0.5 inch (12.7 mm) in height reading: SMOKE DAMPER or FIRE/SMOKE DAMPER. Access doors in ducts shall be tight fitting and suitable for the required duct construction.

A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a corridor enclosure required to have smoke and draft control doors in accordance with Section 715.6.1.2.

Exceptions:

1. Smoke dampers are not required where the building is equipped throughout with an approved smoke control system in accordance with Section 909, and smoke dampers are not necessary for the operation and control of the system.
2. Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019 inch (0.48 mm) in thickness and there are no openings serving the corridor.

715.6.6 Through-penetration fire stops. Through-penetration or membrane- penetration fire stops shall comply with the provisions of this section. Through-penetrations or membrane-penetrations in fire-resistance rated building assemblies, that are not smoke barriers, shall be shall tested in accordance with ASTM E 814 or UL 1479 with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water, or shall comply with any of the alternative methods listed in Sections 715.6.6.1 through 715.6.6.9. The tested system shall have a minimum one hour F-rating or a rating equal to the required rating of the building assembly penetrated if such assembly has a fire resistance rating greater than one hour. Penetration protection of smoke barriers shall comply with Section 910.6.

Exceptions:

1. Penetrations of nonfire resistance rated horizontal fire zone envelope assemblies are permitted to comply with the provisions of this section or section 715.7.1.
2. Penetrations tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119.
3. Floor penetrations contained and located within the cavity of a wall do not require a T- rating.

715.6.6.1 Single concrete floor penetrations (metal pipe or tube). 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 mm^2).

715.6.6.2 Single fire-resistance rated floor penetrations (metal pipe or tube). 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 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 m^2) of floor area.

715.6.6.3 Fire-resistance rated wall penetrations (metal pipe or tube). Penetrations by steel, ferrous or copper pipes, tubes or conduits, are permitted provided the annular space between the penetrating item and the fire-resistance-rated wall is 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 m^2), 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 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.

715.6.6.4 Floor assembly membrane penetrations (metal pipe or tube). Membrane-penetrations of a maximum 2-hour fire-resistance-rated horizontal assembly or horizontal barrier by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the annular space is protected to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.

715.6.6.5 Listed electrical box penetrations. Penetrations by listed electrical boxes of any material provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the ceiling membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise.

715.6.6.6 Listed electrical box membrane penetrations. Membrane-penetrations of a fire-resistance rated assembly membrane by listed electrical boxes of any material are permitted provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise. Such boxes on opposite sides of the wall or partition shall be separated as follows:

1. By a horizontal distance of not less than 24 inches (610 mm);
2. By solid fireblocking in accordance with Section 717.2.1;
3. By protecting both boxes with listed putty pads; or
4. By other listed materials and methods.
5. The annular space created by the penetration of a fire sprinkler, provided it is covered by a metal escutcheon plate.

715.6.6.7 Steel electrical box membrane floor penetrations. Ceiling membrane penetrations of maximum 2-hour fire-resistance-rated horizontal assemblies or horizontal barriers by steel electrical boxes that do not exceed 16 square inches (10 323 mm^2) in area, provided the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed 1/8 inch (3.12 mm).

715.6.6.8 Steel electrical box membrane wall penetrations. Membrane-penetrations of an assembly membrane of maximum two-hour fire-resistance-rated walls and partitions are permitted by steel electrical boxes that do not exceed 16 square inches (0.0103 m^2) in area, provided the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m^2) in any 100 square feet (9.29 m^2) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following:

1. By a horizontal distance of not less than 24 inches (610 mm);
2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;
3. By solid fireblocking in accordance with Section 717.2.1;
4. By protecting both outlet boxes with listed putty pads; or
5. By other listed materials and methods.

715.6.6.9 Sprinkler head penetrations. The annular space created by the penetration of a fire sprinkler head is permitted to be protected by a metal escutcheon plate that completely covers the annular space.

715.6.5.10 Installation. Noncombustible penetrating items shall not connect to combustible items beyond the point of firestopping unless it can be demonstrated that the integrity of the fire-resistance rated building assembly is maintained.

Where sleeves are used, they shall be securely fastened to the building assembly penetrated. The space between the item contained in the sleeve and the sleeve itself and any space between the sleeve and the assembly penetrated shall be protected in accordance with the applicable provisions of Section 715.6.6. Insulation and coverings on or in the penetrating item shall not penetrate the building assembly unless the specific material used has been tested as part of the assembly in accordance with this section.

715.6.7 Fire-resistant joint systems. Fire-resistant joint systems shall comply with the provisions of this section. Joints in or between fire-resistance-rated building assemblies shall be protected by a fire-resistant joint system.

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

1. Floors within a single dwelling unit.
2. Floors within malls.
3. Mezzanine floors.
4. Walls that are permitted to have unprotected openings.
5. Roofs where openings are permitted.
6. Joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119.

715.6.7.1 Fire protection rating. Fire-resistant joint systems shall be designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the building assembly in or between which it is installed.

715.6.7.2 Testing. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E 1966 or UL 2079. Nonsymmetrical wall joint systems 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. Where evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to approval by the building official, the wall need not be subjected to tests from the opposite side.

Exception: For exterior walls with a horizontal fire separation distance greater than 5 feet (1524 mm), the joint system shall be required to be tested for interior fire exposure only.

715.6.7.3 Installation. Fire-resistant joint systems shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of flame and hot gases.

715.6.7.4 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 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 706.9.

715.7 Nonfire-resistance-rated fire zone opening protection. Openings in nonfire-resistance rated floor/ceiling construction that is a portion of a fire zone envelope shall be protected in accordance with this section or enclosed in accordance with Sections 715.8.

715.7.1 Penetrating items. Through-membrane or membrane-penetrations in or between floor or floor/ceiling building assemblies shall be protected by an approved flamestop or a listed through-penetration firestop system.

715.7.2 Construction joints. Joints installed in or between floor or floor/ceiling building assemblies shall be protected by an approved flamestop or a listed fire-resistant joint system.

715.7.3 Ducts. Ducts shall be constructed of sheet steel not less than 0.019 inch (0.48 mm) (26 gage) in thickness. The annular space around the duct shall not exceed 1/8 inch (3.1 mm) and shall be filled with cellulose loose-fill, rockwool or slag mineral wool insulation or other approved material. Or, ducts shall be protected with a listed fire damper.

715.7.4 Flamestops. Where required by other provisions of this code, flamestops shall be protected with materials that prevent the passage of flame and hot gases; however, need not comply to ASTM E 119 time-temperature fire conditions.

715.8 Enclosures. Shaft enclosures, exit enclosures and atrium enclosures required by other provisions of this code shall comply with the provisions of this section.

715.8.1 Utility openings. Except as permitted in Section 715.2, openings in floor/ceiling construction for elevators, dumbwaiters, or other hoistways; refuse and laundry chutes and plumbing, electrical, HVAC or other equipment shall be enclosed by a shaft enclosure constructed in accordance with this section. Elevator, dumbwaiter and other hoistway enclosures shall be also be constructed in accordance with Chapter 30.

> **Exception:** 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.

A shaft enclosure containing a refuse chute or laundry chute shall not be used for any other purpose and shall originate and terminate in rooms in accordance with Section 715.8.1.2.3.

> **Exception:** Chutes serving, and contained within, a single dwelling unit.

Refuse chutes shall not terminate in an incinerator room.

715.8.1.1 Materials. Shaft enclosures shall be constructed of materials consistent with those permitted for the type of construction of the building in accordance with Section 602.2-5.

715.8.1.2 Construction. Shaft enclosures shall be constructed as fire barriers in accordance with Section 708 or horizontal barriers in accordance with Section 711, or both.

715.8.1.2.1 Bottom enclosure. Shaft enclosures 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 enclosure 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 utility opening. The room shall be separated from the remainder of the building by fire barriers constructed in accordance with Section 708 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating and protectives shall be at least equal to the protection required for the shaft enclosure.

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 the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft enclosure shall be closed off around the penetrating items with materials permitted by Section 714.3.1 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 715.8.1.2.3.
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.

715.8.1.2.2 Top enclosure. Shaft enclosures that do not extend to the underside of the roof sheathing, slab or deck of the building shall be enclosed at the top with a horizontal barrier having the same fire-resistance rating as the topmost floor through which the shaft enclosure passes, but not less than the fire-resistance rating required for the shaft enclosure.

Openings in a horizontal barrier at the top of a shaft enclosure shall be protected with opening protective assemblies in accordance with Sections 715.6.3 through 715.6.6

715.8.1.2.3 Access and termination rooms. Access and termination rooms shall comply with the provisions of this section. Where applicable, termination rooms shall also comply with the provisions of Section 508.2. Access and termination rooms shall be constructed as fire barriers in accordance with Section 708 or horizontal barriers in accordance with Section 711, or both and shall have a fire-resistance ratings of not less 1 hour. Access and termination rooms shall be equipped with an automatic sprinkler system installed in accordance with Section 903.2.10.2.

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

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft enclosure in accordance with Section 715.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-2 and I-3 occupancies, 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 715.8.1.3.4.1.

715.8.1.2.4.1 Pressurization alternative. Shaft enclosure pressurization is permitted to be provided in lieu of required elevator lobbies. The pressurization system shall comply with this section.

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

Fan systems located within the building and duct systems that are part of the pressurization system shall be protected with the same fire-resistance rating as required for the elevator shaft enclosure. The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system. A separate fan system shall be used for each elevator hoistway. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet. The supply fan shall either be adjustable with a capacity of at least 1,000 cfm (.4719 m^3/s) per door, or that specified by a registered design professional to meet the requirements of a designed pressurization system. The pressurization system shall be provided with standby power from the same source as other required emergency systems for the building. The shaft enclosure pressurization system shall be activated upon activation of the building fire alarm system or upon activation of the elevator lobby smoke detectors.

715.8.1.3 Fire-resistance rating. Shaft enclosures shall have a fire-resistance rating of not less than 1 hour where connecting less than four stories and not less than 2 hours where connecting four stories or more. Shaft enclosures shall have a fire-resistance rating not less than the floor/ceiling assembly penetrated, but need not exceed 2 hours.

Exception: Where exterior walls serve as a part of a shaft enclosure, such walls shall comply with the requirements of Section 706 for exterior walls and the fire-resistance-rated shaft enclosure requirements shall not apply.

715.8.1.4 Openings. Openings in shaft enclosures shall be protected with opening protective assemblies in accordance with Section 715.5.2.2 for fire barriers.

Exceptions:

1. Fire dampers are not required in 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. 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 in 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. Subducts 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 Section 909.11, so as to maintain a continuous upward airflow to the outside.
3. Smoke dampers are not required in 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 in 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.

Openings other than those necessary for the utility purpose of the shaft shall not be permitted in shaft enclosures.

Openings into refuse or laundry chutes shall not be located in means of egress corridors. Heat-activated closing devices shall be permitted between refuse or laundry chutes and their termination rooms.

715.8.2 Egress openings. Except as permitted in Section 715.2, openings in floor/ceiling construction for interior means of egress stairways and ramps shall be enclosed by an exit enclosure constructed in accordance with this section.

Exceptions:

1. Means of egress stairways as required by Section 410.5.4 are not required to be enclosed.
2. Stairways in Group I-3 occupancies, as provided for in Section 408.3.6, are not required to be enclosed.

715.8.2.1 Materials. Exit enclosures shall be constructed of materials consistent with those permitted for the type of construction of the building in accordance with Section 602.2-5.

715.8.2.2 Construction. Exit enclosures shall be constructed as fire barriers in accordance with Section 708 or horizontal barriers in accordance with Section 711, or both.

Exterior walls of an exit enclosure shall comply with the requirements of Section 706. Where nonrated walls or unprotected openings enclose the exterior of the stairway and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), the building exterior walls within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening shall have a fire-resistance rating of not less than 1 hour. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. This construction shall extend vertically from the ground to a point 10 feet (3048 mm) above the topmost landing of the stairway or to the roof line, whichever is lower.

715.8.2.3 Fire-resistance rating. Exit enclosures shall have a fire-resistance rating of not less than 1 hour where connecting less than four stories and not less than 2 hours where connecting four stories or more. Exit enclosures shall have a fire-resistance rating not less than the floor/ceiling assembly penetrated, but need not exceed 2 hours.

715.8.2.4 Openings. Openings in exit enclosures shall be protected with opening protective assemblies in accordance with Section 715.5.2.2 for fire barriers.

Openings in exit enclosures shall be limited to those necessary for exit access to the enclosure from normally occupied spaces and for egress from the exit enclosure.

Exceptions:

1. Unprotected exterior openings as permitted in Section 706.8.
2. Service areas as permitted in Section 402.4.6.

Openings into or through an exit enclosure are prohibited except for required exit doors, equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceways for fire department communication systems and electrical raceways serving the exit enclosure and terminating at a steel box not exceeding 16 square inches (0.010 m^2). Such openings shall be protected in accordance with Section 715.6.5. There shall be no penetrations or communication openings, whether protected or not, between adjacent exit enclosures.

Equipment and ductwork for exit enclosure ventilation shall comply with one of the following items:

1. Such equipment and ductwork shall be located exterior to the building and shall be directly connected to the exit enclosure by ductwork enclosed in construction as required for shafts.
2. Where such equipment and ductwork is located within the exit enclosure, the intake air shall be taken directly from the outdoors and the exhaust air shall be discharged directly to the outdoors, or such air shall be conveyed through ducts enclosed in construction as required for shafts.
3. Where located within the building, such equipment and ductwork shall be separated from the remainder of the building, including other mechanical equipment, with construction as required for shafts.

In each case, openings into the fire-resistance-rated construction shall be limited to those necessary for maintenance and operation and shall be protected by opening protective assemblies in accordance with Section 715.8.1.4 for shaft enclosures.

Exit enclosure ventilation systems shall be independent of other building ventilation systems.

Elevators shall not open into an exit enclosure.

Fire door assemblies in exit enclosures shall comply with Section 715.6.1.2.

715.8.3 Architectural openings. Except as permitted in Section 715.2, openings in floor/ceiling construction for aesthetic or functional purposes, to include escalators, shall be enclosed by an atrium enclosure constructed in accordance with this section.

The floor of the atrium shall not be used for other than low fire hazard uses and only approved materials and decorations in accordance with the *International Fire Code* shall be used in the atrium space.

Exception: The atrium floor area is permitted to be used for any approved use where the individual space is provided with an automatic sprinkler system in accordance with Section 903.3.1.1.

715.8.3.1 Materials. Atrium enclosures shall be constructed of materials consistent with those permitted for the type of construction of the building in accordance with Section 602.2-5.

715.8.3.2 Construction. Atrium enclosures shall be constructed as fire barriers in accordance with Section 708 or horizontal barriers in accordance with Section 711, or both.

715.8.3.3 Fire-resistance rating. Atrium enclosures shall have a fire-resistance rating of not less than 1 hour.

Exceptions:

1. A glass wall forming a smoke partition where automatic sprinklers are spaced 6 feet (1829 mm) or less along both sides of the separation wall, or on the room side only if there is not a walkway on the atrium side, and between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction. The glass shall be installed in a gasketed frame so that the framing system deflects without breaking (loading) the glass before the sprinkler system operates.
2. A glass-block wall assembly in accordance with Section 2110 and having a ¾-hour fire protection rating.

715.8.3.4 Openings. Openings in atrium enclosures shall be protected with opening protective assemblies in accordance with Section 715.5.2.2 for fire barriers.

Exception: Fire window assemblies permitted in atrium enclosure walls shall not be limited to a maximum aggregate width of 25 percent of length of the wall.

715.8.3.5 Escalators. An 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 1/2 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.

715.8.3.6 Unlimited height in stories. An atrium is permitted to be of unlimited height in stories based on the building type of construction when complying with the provisions of this section.

715.8.3.6.1 Automatic sprinkler system. 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 708 or horizontal barriers 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.

715.8.3.6.2 Smoke control system. A smoke control system shall be installed in accordance with Section 909.

715.8.3.6.3 Standby power. Equipment required to provide smoke control shall be connected to a standby power system in accordance with Section 909.11.

715.8.3.6.4 Interior finish. The interior finish of walls and ceilings of the atrium shall not be less than Class B with no reduction in class for sprinkler protection.

715.8.3.6.5 Travel distance. In other than the lowest level of the atrium, where the required means of egress is through the atrium space, the portion of means of egress travel distance within the atrium space shall not exceed 200 feet (60 960 mm).

(Delete Section 716 in its entirety and substitute with new Section 715, see above)

~~SECTION 716~~
~~DUCTS AND AIR TRANSFER OPENINGS~~

(Entire section relocated from Section 717 and renumbered to Section 716)

SECTION ~~717~~ 716
CONCEALED SPACES

(Entire section relocated from Section 718 and renumbered to Section 717)

SECTION ~~718~~ 717
FIRE-RESISTANCE REQUIREMENTS FOR PLASTER

(Entire section relocated from Section 719 and renumbered to Section 718)

SECTION ~~719~~ 718
THERMAL- AND SOUND-INSULATING MATERIALS

PART III – IBC MEANS OF EGRESS

1. Delete Section 1020 in its entirety and substitute as follows:

SECTION 1020
EXIT ENCLOSURES

1020.1 General. Exit enclosures serving as a means of egress component in a means of egress system shall comply with the provisions of this section. An exit enclosure shall not be used for any purpose other than means of egress. An exit enclosure shall discharge directly to the exterior of a building or into an exit passageway that discharges directly to the exterior of the building.

> **Exception:** An exit enclosure shall be permitted to egress through areas on the level of discharge or vestibules as permitted by Section 1024.

1020.2 Construction. Exit enclosures shall be constructed in accordance with Section 713.8.2.

1020.3 Discharge barrier. A stairway in an exit enclosure shall not continue below the level of exit discharge unless an approved barrier is provided at the level of exit discharge to prevent persons from unintentionally continuing into levels below. Directional exit signs shall be provided as specified in Section 1011.

1020.4 Story level identification signs. A sign shall be provided at each floor landing in interior exit enclosures connecting more than three stories designating the floor level, the terminus of the top and bottom of the exit enclosure and the identification of the stair or ramp. The signage shall also state the story of, and the direction to the exit discharge and the availability of roof access from the enclosure for the fire department. The sign shall be located 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. Story level identification signs in tactile characters complying with ICC A117.1, shall be located at each story level landing adjacent to the door leading from the enclosure into the corridor to identify the floor level.

1020.4.1 Signage requirements. Story level identification signs shall comply with all of the following requirements:

1. The signs shall be a minimum size of 18 inches (457 mm) by 12 inches (305 mm).
2. The letters designating the identification of the stair enclosure shall be a minimum of 1 1/2 inches (38 mm) in height.
3. The number designating the floor level shall be a minimum of 5 inches (127 mm) in height and located in the center of the sign.
4. All other lettering and numbers shall be a minimum of 1 inch (22 mm) in height.
5. Characters and their background shall have a nonglare finish. Characters shall contrast with their background, with either light characters on a dark background or dark characters on a light background.

1020.5 Smokeproof enclosures. In buildings required to comply with Section 403 or 405, each of the exit enclosures of a building that serves stories where the floor surface is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access or more than 30 feet (9144 mm) below the level of exit discharge serving such floor levels shall be a smokeproof enclosure or pressurized stairway in accordance with Section 909.20.

1020.5.1 Enclosure access. Access to the stairway within a smokeproof enclosure shall be by way of a vestibule or an open exterior egress balcony.

Exception: Pressurized stairways complying with the provisions of Section 909.20.5.

2. Revise as follows:

1021.4 Openings ~~and penetrations~~. ~~Exit passageway opening protectives shall be in accordance with the requirements of Section 715.~~ Except as permitted in Section 402.4.6, openings in exit passageways other than unexposed exterior openings shall be imited to those necessary for exit access to the exit passageway form normally occupied spaces and for egress from the exit passageway.

~~1021.5 Penetrations.~~ ~~Penetrations into and~~ Openings into or through an exit passageway are prohibited except for required exit doors, equipment and ductwork necessary for independent pressurization, sprinkler piping, standpipes, electrical raceways for fire department communication and electrical raceways serving the exit passageway and terminating at a steel box not exceeding 16 square inches (0.010 m^2). Such ~~penetrations~~ openings shall be protected in accordance with Section ~~712~~ 713.6. There shall be no ~~penetrations or~~ intercommunicating openings, whether protected or not, between adjacent exit passageways.

Where interior exit enclosures are extended to the exterior of a building by an exit passageway, the door assembly from the exit enclosure to the exit passageway shall be protected by a ~~fire door~~ smoke and draft control assembly conforming to the requirements ~~in~~ of Section ~~715.4~~ 713.6.1. Fire door assemblies in exit passageways shall comply with Section 715.4.4.

Elevators shall not open into an exit passageway.

1022.3 Openings ~~protectives~~. Fire doors in horizontal exits shall be self-closing or automatic-closing when activated by a smoke detector in accordance with Section ~~715.4.7.3~~ 713.6.1.5.1. Doors, where located in a cross-corridor condition, shall be automatic-closing by activation of a smoke detector installed in accordance with Section ~~715.4.7.3~~ 713.6.1.5.1.

Reason: Please do not be intimidated by the length of this proposal. It represents a broad based initiative to improve the *International Building Code* in a very important area: the protection of openings intended to restrict the vertical movement of fire. Prior to technical discussions, I would like to provide a brief history as regards this proposal. Late last year, The Boeing Company approached the ICC Code Technology Committee and shared a concern about how opening and penetration requirements for horizontal assemblies were inconsistent and difficult for users to properly determine. To illustrate the point, it was noted that Section 713.1 would require that joints installed in a fire-resistance rated floor/ceiling assembly be protected with an approved fire-resistant joint system, while Section 1020.1 would permit an open convenience stairway within the same floor/ceiling assembly. It was suggested that there needs to be a vertical migration strategy and that technical requirements should support that strategy in concert as opposed to being a collection of abstract requirements that perhaps achieve no practical end. The CTC agreed with the concern and appointed a Vertical Openings Study Group to research the matter. The Study Group was constituted of diverse members from the public and private sectors. The Study Group met only twice; however, produced a "clean sheet" discussion draft that completely overhauled many Chapter 7 definitions and technical provisions. It also developed a fire and flame migration strategy that included a compartmentation concept. Current opening protective technical requirements were examined and reorganized in an effort to be more understandable by designers and code enforcement officials alike. A consistent format was created throughout the document to enhance user friendliness. Although a considerable amount of quality work had been accomplished in a relatively short period of time, the Study Group members could not achieve accord on acceptable migration limits. Some Study Group members felt that in light of arguably liberal allowable areas—especially in sprinklered buildings—that more conservative and complete compartmentation was necessary to compensate for current allowable areas. The Study Group decided to slow down and validate the strategy assumptions based on current exceptions to opening protection requirements. Unfortunately, this detailed study would sufficiently delay the project to where it would not be completed prior to the 2007/2008 code development submittal deadline.

Meanwhile, another CTC Study Group (BFP Features) was investigating the subject of allowable heights and areas. That group had met on numerous occasions and appeared to be mired in a comparison of the current IBC allowable heights and areas to those permitted in the legacy or former model codes. At a recent Features meeting in Chicago (August 1-3, 2007), that Study Group decided to take a "clean sheet" approach to the issue and developed a fire flow driven allowable area determination procedure based on a compartmentation concept. There were two primary premises with their approach. First, have low fire flow and allowable area thresholds to as to encourage the installation of an automatic sprinkler system early in design development. Secondly, create some necessary passive redundancy to the active fire protection features by establishing a number of relatively small fire compartments—especially in the so-called "lesser types of construction." By way of example, current IBC provisions would allow for up to approximately 174,000 square feet of gross Group F-1 area in a sprinklered building of Type IIB construction. Given the lack of inherent fire-resistance rated construction, the only compartmentation is achieved by way of fragmented vertical openings provisions. In comparison, the Type IIB, sprinklered, Group F-1 maximum compartment size would be approximately 32,000 square feet according to the progressive Features' approach. A major difference from current allowable area determination methods is that the "fire compartment" is an amorphous space that can include any number of stories as may be permitted based on the occupancy classification and type of construction under consideration. Under this system, the story-by-story determination of total allowable building area is a thing of the past. During the Features Study Group discussion it was emphasized that there were three volumetric entities: Buildings, fire compartments and fire zones. Buildings define the total allowable area. Fire compartments are generally limited as to individual area. Fire zones are subcompartments within fire compartments and serve to define the vertical migration limits within a given fire compartment. On numerous occasions, the Features Study Group referenced the Vertical Openings Study Group's thinking as completely compatible with their evolving concept and did not attempt to influence the Vertical Openings Group in any way. The BFP Features Study Group intends to submit their progressive allowable area proposal in this code development cycle. Given the close philosophical and technical relationship between the Features' proposal and the Vertical Openings discussion draft, it is imperative that the draft be submitted during the same code development cycle. It is somewhat likely that some of the reservations expressed by the Vertical Openings Study Group members concerning the proposed migration limits might be lessened given the Features group's fairly conservative approach to allowable area determination. It should be noted that although the two proposals would greatly complement each other, they are mutually exclusive can individually stand on their own merit.

As previously mentioned, this proposal is a “clean sheet” document intended to fairly completely overhaul IBC opening protection provisions. There are three major features to the proposal. First, it directly states a fire and flame migration strategy in its Table 713.2. Secondly, it provides a logical format to organize applicable technical provisions that will enhance usability by code practitioners. Lastly, specific technical requirements were reviewed for applicability and compatibility with the migration strategy and each other.

As regards the stated fire and flame migration strategy, this proposal takes a different tack than does the current IBC. Presently, the fundamental IBC premise with respect to the protection of openings in floor/ceiling assemblies—be they fire-resistance rated or nonfire-resistance rated—is that no unprotected openings are permitted. The reality is, however, that there are numerous exceptions that permit unprotected openings in floor/ceiling assemblies based on any one of a number of variables. The point being that these exceptions, become the rule and collectively define an implied vertical migration strategy. This proposal provides for an incremental migration strategy based on the collective intent of the multitude of current exceptions. The stated strategy is that for other than Group H and I occupancies, a two-story migration of fire and flame is acceptable. 2006 Sections 707.2, Exception 7 and 1020.1, Exceptions 1, 8 and 9, among others, serve as the precedent for this approach. It should be noted that the basic fire zone philosophy is that fire zone boundaries (both vertical and horizontal) have complete protection of openings. Within fire zones, the only protection of openings required for floor/ceiling assemblies would be those necessary to maintain the fire resistive integrity of a rated horizontal assembly. The lack of coordination between current opening protective requirements results in a “Swiss cheese” migration strategy. This proposal promotes an “all or nothing” philosophy that provides for a logical, predicable and dependable migration boundary.

It must also be understood that fire zones intended to restrict the upward movement of fire or flame, can occur in buildings of both rated and nonrated construction types. While the fire compartment provides for a fire-resistance rated boundary, regardless of the type of construction, fire zones within fire compartments are constructed with building assemblies that are consistent with the building type of construction. As previously mentioned, the fire zone achieves its integrity through the protection of openings consistent with the inherent fire-resistance rating requirements for the building floor/ceiling assemblies. In fire-resistance rated construction, fire zone horizontal boundaries are protected by rated enclosures and/or listed opening protective assemblies. Within a fire zone in a rated building, no enclosures would be required and the only openings required to be protected would be those necessary to maintain the fire resistive integrity of the horizontal assembly itself. In buildings of nonrated construction, the fire zone horizontal boundaries would continue to be nonfire-resistance rated; however, openings would be required to be protected by rated enclosures and/or generic flamestopping methods. Within a fire zone in a nonrated building, there are no opening protection requirements.

The two-story migration limit is extended to three stories where the building is equipped throughout with an automatic sprinkler system. Numerous sprinkler progressions and current Section 707.2, Exception 2 serve as a precedent for this provision. It should be noted that although no inherent opening protection is required for the two floor/ceiling assemblies within a three story envelope—to include exit enclosures—each fire zone having a level more than two stories above grade plane is required to have at least one exit enclosure leading to the exterior of the building or all points of the fire zone have to be within 300 feet of an exit enclosure for fire department access and staging purposes. An exit enclosure is a unique building feature. It can actually serve three distinct purposes: One, it can serve to isolate one story from another for fire migration purposes. Hence, the term, “stair shaft.” Two, it can serve as an exit component which provides for a protected, and potentially unlimited length path of travel. Three, an exit enclosure can serve as a protected area for fire department access and operations. During the first Vertical Openings Study Group meeting, it was decided that all openings and penetrations should be treated equally because, “a hole in the floor is a hole in the floor.” Therefore, for fire migration purposes, an exit enclosure (as well as a shaft enclosure or atrium enclosure) would be required only at fire zone boundaries. From a means of egress perspective, an exit enclosure is an exit component similar to an exit passageway or horizontal exit. That is, they are incorporated into the building design as necessary to satisfy one or more means of egress design requirements—more than likely, travel distance limitations. Since a number of intercommunicating floors are unacceptable from a fire fighting perspective, an exit enclosure is mandated for fire zones above the second story.

Other than Group H or I occupancies are permitted to have four intercommunicating floor levels provided the building is provided with a sprinkler system and the fire zone is protected by a mechanical smoke control system. Section 404 atrium provisions serve as the precedent for this migration limit.

As previously suggested, the fire and flame migration limits established in this proposal are founded on current migration provisions and are positively stated in a single table and represent a logical progression of passive and active building fire protection features.

Once a migration strategy was developed, an editorial format was created to organize various technical provisions so as to support the adopted philosophy. Given the “hole is a hole—opening is an opening” methodology, it was determined that a single section (Section 713) would contain all opening protection provisions. Accordingly, Sections 404 and 707 have been deleted in their entirety and applicable provisions incorporated in context into proposed Section 713. Exit enclosure construction requirements have been relocated from Section 1020 to Section 713. All enclosure protection requirements have been consolidated in a single location. It is interesting to note that of the 22 exceptions formerly contained in Sections 707 and 1020, 21 were eliminated due to the formal establishment of migration limits as prescribed in proposed Table 713.2.

Also, a number of key definitions were created or modified to support this system. Perhaps the most important is that the term “opening” is defined for the first time. It simply states that any breach for virtually any purpose is treated as an opening. Where the current IBC differentiates between openings and penetrations, the proposed section does not (a hole is an opening). The fundamental premise is that where openings are required to be protected, they will be either enclosed by physical construction or protected by an opening protective assembly in rated construction or enclosed or flamestopped (another new definition) in nonrated construction.

With respect to opening protective assemblies, only seven are recognized as those seven are the only formally tested protectives. They are: fire door assemblies, fire window assemblies, fire dampers, ceiling dampers, smoke dampers, through-penetration fire stops and fire-resistant joint systems. Accordingly, opening protection goes to remedy. If the “hole” in a fire zone boundary can be mitigated by a listed opening protective assembly, migration requirements are satisfied. If not, the “hole” needs to be enclosed in accordance with Section 713.8. Additionally, each of the opening protective assembly sections has been subdivided with a consistent format: fire protection rating, testing, labeling and installation. All applicable technical requirements have been properly located within this editorial structure. This typical format allows for the objective comparison of various opening protective assembly requirements.

Another new definition worth noting is, “horizontal barrier.” Currently, there are a number of vertical assemblies intended to address various structural or confinement requirements. On the horizontal plane, the “horizontal assembly” is presently the only fire-resistance rated assembly of choice. The proposed horizontal barrier is comparable to the fire barrier with openings required to be protected while the horizontal assembly is more based on type of construction requirements than fire confinement concerns. The two types of fire-resistance rated horizontal construction simplify opening protection requirement determination.

Specific technical requirements for the various enclosure and opening protective assembly options are very similar to current provisions. To account for all detailed technical provisions would take a number of pages. If one is concerned with a specific provision, it is suggested that it be copied from the current code and then entered as a search or find function in the proposed text. With this “clean sheet” document, there are countless changes made for the sake of editorial and technical continuity and user accommodation. It would be virtually impossible to address each and every change. The major points have been addressed. Hopefully, the more subtle details will appeal to common sense.

In summary, it is recognized that this is a very lengthy and comprehensive proposal submitted in a process that lends itself to incremental improvement. If the *International Building Code* is to be significantly and functionally improved, it is necessary to be more ambitious in the scrutiny of major subject areas. This proposal is the result of input by a number of nationally recognized code experts, although those individuals do not necessarily endorse this proposal at this time. Almost all concerned recognize that the current opening protective requirements are technically inconsistent and, in total, probably support no rational fire migration strategy. Opening protective technical requirements are presently difficult to

determine and result in varying interpretations and applications. Similar to current code provisions, this proposal is certainly an imperfect document; however, it represents a significant improvement over those current code provisions and will serve as a foundation for subsequent revisions that will necessarily be in context. This proposal in combination with the BFP Features Study Group's similarly progressive allowable area determination proposal will significantly improve the schematic provisions of the International Building Code. Please view these proposals objectively and offer constructive vs. destructive criticism. The implementation of these concepts will greatly improve the effectiveness and usability of the IBC.

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

PART I – IBC GENERAL

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

PART II – IBC FIRE SAFETY

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

FS163–07/08

803.1.4, 803.9, 803.11.2, 2603.4.1.2

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

Revise as follows:

803.1.4 (Supp) Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E 84 or UL 723. Textile wall and ceiling coverings and expanded wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by an automatic ~~sprinklers~~ sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

TABLE 803.9 (Supp)
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY [k]

l. Applies when the exit enclosures, exit passageways, corridors or rooms and enclosed spaces are protected by ~~a~~ an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

(Portions of table and footnotes not shown remain unchanged)

803.11.2 (Supp) Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.11.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used except where interior finish materials are protected on both sides by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, or attached to noncombustible backing or furring strips installed as specified in Section 803.11.1. The hangers and assembly members of such dropped ceilings that are below the main ceiling line shall be of noncombustible materials, except that in Type III and V construction, fire-retardant-treated wood shall be permitted. The construction of each set-out wall shall be of fire-resistance-rated construction as required elsewhere in this code.

2603.4.1.2 Cooler and freezer walls. Foam plastic installed in a maximum thickness of 10 inches (254 mm) in cooler and freezer walls shall:

1. Have a flame spread index of 25 or less and a smoke-developed index of not more than 450, where tested in a minimum 4 inch (102 mm) thickness.
2. Have flash ignition and self-ignition temperatures of not less than 600°F and 800°F (316°C and 427°C), respectively.
3. Have a covering of not less than 0.032-inch (0.8 mm) aluminum or corrosion-resistant steel having a base metal thickness not less than 0.0160 inch (0.4 mm) at any point.

4. Be protected by an automatic sprinkler system in accordance with Section 903.3.1.1. Where the cooler or freezer is within a building, both the cooler or freezer and that part of the building in which it is located shall be sprinklered.

Reason: The changes are proposed for consistency with the use of "automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 (where applicable)" elsewhere in the 2006 IBC and 2007 IBC Supplement. These are virtually the only instances in the 2006 IBC or 2007 IBC Supplement where consistency is lacking.

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

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

FS164–07/08
803.1.4, Chapter 35 (New)

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

1. Revise as follows:

803.1.4 (Supp) Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E 84 or UL 723. Textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E 84 or UL 723 and be protected by automatic sprinklers installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E 2404.

2. Add new standard to Chapter 35 as follows:

ASTM

E 2404-06	Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Vinyl Wall or Ceiling Coverings to Assess Surface Burning Characteristics

Reason: This proposal recommends that a standard practice be referenced for testing textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings in the Steiner tunnel test, ASTM E 84. The committee on fire standards, ASTM E05, developed a standard practice, entitled **Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Vinyl Wall or Ceiling Coverings to Assess Surface Burning Characteristics,** specifically for a mandatory way of preparing test specimens and mounting them in the tunnel. This replaces optional guidance on mounting methods found in the Appendix of ASTM E 84 and ensures testing consistency.

This proposal also corrects a typo, by adding the missing word vinyl.

Cost Impact: This proposal should not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E 2404, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

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

FS165–07/08
803.9 (New); IFC 803.8 (New)

Proponent: Jim Lathrop, Koffel Associates, Inc., representing Bobrick

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

PART I – IBC FIRE SAFETY

Add new text as follows:

803.9 High Density Polyethylene (HDPE). Where high density polyethylene is used as an interior finish it shall comply with Section 803.1.2. (Supp)

(Renumber subsequent sections)

PART II – IFC

Add new text as follows:

803.8 High Density Polyethylene (HDPE). Where high density polyethylene is used as an interior finish it shall comply with Section 803.1.2. (Supp) of the IBC

Reason: HDPE is a thermoplastic that when it burns gives off considerable energy and produces a pooling flammable liquids fire. Recent full scale room-corner tests using NFPA 286 have demonstrated a significant hazard. These tests had to be terminated prior to the standard 15 minute duration due to flashover occurring, yet there was still much of the product left to burn. Extensive flammable liquid pool fires occurred during the tests. Yet this same material when tested in accordance with the tunnel test, ASTM E-84, is often given a FSI of 25 or less. However the resulting test is so intense some labs will not test HDPE partitions in their tunnel due to the damage it can do to the tunnel. This proposal will assure that when using HDPE partitions they will be formulated in such a manner to reduce the hazard that they present. Following is some of the data from one of the NFPA 286 tests: Peak HRR (excl burner) 1733 kW; Total Heat Released (excl. burner) 121 MJ; Peak Heat Flux to the floor 35.2 kW/m^2; Peak Avg Ceiling Temp 805^{o}C, 1481^{o}F

Cost Impact: NFPA 286 is a more expensive test than is ASTM E-84 however it yields usable data that ASTM E-84 does not, and the test arrangement is more representative of how the product is used.

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

FS166–07/08
803.9 (New); IFC 803.8 (New)

Proponent: James Lathrop, Koffel Associates, Inc., representing Bobrick

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

PART I – IBC FIRE SAFETY

Add a new text as follows:

803.9 High Density Polyethylene (HDPE). Where high density polyethylene is used for toilet room privacy partitions, the partitions shall comply with Section 803.1.2. (Supp)

(Renumber subsequent sections)

PART II – IFC

Add a new text as follows:

803.8 High Density Polyethylene (HDPE). Where high density polyethylene is used for toilet room privacy partitions, the partitions shall comply with Section 803.1.2. (Supp) of the IBC

Reason: (IBC-FS and IFC) This proposal limits the HDPE restrictions to only HDPE used as toilet room privacy partitions. Although we believe that the use of HDPE should be regulated by NFPA 286 regardless of where the partition is used, we acknowledge that the testing done was on toilet room privacy partitions and this proposal will give the committee the opportunity to so limit it should they desire.

HDPE is a thermoplastic that when it burns gives off considerable energy and produces a pooling flammable liquids fire. Recent full scale room-corner tests using NFPA 286 have demonstrated a significant hazard. These tests had to be terminated prior to the standard 15 minute duration due to flashover occurring, yet there was still much of the product left to burn. Extensive flammable liquid pool fires occurred during the tests. Yet this same material when tested in accordance with the tunnel test, ASTM E-84, is often given a FSI of 25 or less. However the resulting test is so intense some labs will not test HDPE partitions in their tunnel due to the damage it can do to the tunnel. This proposal will assure that when using HDPE partitions they will be formulated in such a manner to reduce the hazard that they present. Following is some of the data from one of the NFPA 286 tests: Peak HRR (excl burner) 1733 kW; Total Heat Released (excl. burner) 121 MJ; Peak Heat Flux to the floor 35.2 kW/m^2; Peak Avg Ceiling Temp 805^{o}C, 1481^{o}F

Cost Impact: NFPA 286 is a more expensive test than is ASTM E-84 however it yields usable data that ASTM E-84 does not, and the test arrangement is more representative of how the product is used.

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

FS167–07/08

803.9 (New), 202 (New), Chapter 35 (New)

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

1. Add new text as follows:

803.9 Site-fabricated stretch systems. Where used as interior wall or interior ceiling finish materials, site-fabricated stretch systems shall be tested in the manner intended for use, and shall comply with the requirements of Section 803.1.1 or 803.1.2. If the materials are tested in accordance with ASTM E 84 or UL 723, specimen preparation and mounting shall be in accordance with ASTM E 2573.

(Renumber subsequent sections)

2. Add new definition as follows:

Site-fabricated stretch system. A system, fabricated on site and intended for acoustical, tackable or aesthetic purposes, that is comprised of three elements: (a) a frame (constructed of plastic, wood, metal or other material) used to hold fabric in place, (b) a core material (infill, with the correct properties for the application), and (c) an outside layer, comprised of a textile, fabric or vinyl, that is stretched taunt and held in place by tension or mechanical fasteners via the frame.

3. Add new standard to Chapter 35 as follows:

ASTM

E 2573-07	Standard Practice for Specimen Preparation and Mounting of Site-Fabricated Stretch Systems to Assess Surface Burning Characteristics

Reason: The ASTM committee on fire standards, ASTM E05, has issued a standard practice, ASTM E 2573, Standard practice for specimen preparation and mounting of site-fabricated stretch systems. Until now there was no correct mandatory way to test these systems. These systems are now being used extensively because they can stretch to cover decorative walls and ceilings with unusual looks and shapes. The systems consist of three parts: a fabric (or vinyl), a frame and an infill core material. The testing has often been done of each component separately instead of testing the composite system. That is an inappropriate way to test and not the safe way to conduct the testing. Now that a consensus standard method of testing exists, the code should recognize it. The proposed definition was taken from the standard, ASTM E 2573, word for word.

This type of product is not exclusive to any individual manufacturer. Three examples, taken from different manufacturers, are shown as illustrations.

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

Analysis: A review of the standard proposed for inclusion in the code, ASTM E 2573, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

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

FS168–07/08
803.11.4

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

Revise as follows:

803.11.4 (Supp) Materials. An interior wall or ceiling finish that is not more than 0.25 inch (6.4 mm) thick shall be applied directly against a noncombustible backing.

Exceptions:

1. ~~Class A materials, in accordance with Section 803.1.1 or 803.1.2.~~ Non-combustible materials.
2. Materials where the qualifying tests were made with the material suspended or furred out from the noncombustible backing.

Reason: Taking into account how the E 84 test is performed, this code allowance has no basis in physics. Most thin combustible materials take on the burning characteristics of their substrate. In the E 84 furnace, thin combustible materials are held in place with chicken wire on top of one-quarter inch metal rods two feet on center down the length of the furnace. As tested, the substrate is the noncombustible lid of the furnace. The fire dynamics issue has to do with mass to surface burning ratio. The more surface, and less mass, exposed to oxygen and heat, the more apt a material is to burn (dust explosions are one example). As such, many thin combustible materials can obtain a Class A rating, but may readily burn when they have no substrate and are exposed to an ignition source. The paper on drywall is one such example.

An additional concern is the potential for adverse interaction with sprinklers. If a fire originates between four heads, when the heat plume impinges on the thin combustible ceiling, there is no assurance that sprinklers in the plane of the membrane will activate prior to the membrane deteriorating. If the membrane degrades from the heat, the heat will enter the void above the membrane and the sprinklers protecting the void will activate. Sprinklers above the membrane will then pre-wet the membrane and the sprinkler piping penetrating the membrane. This situation may allow the fire to spread below the membrane.

Cost Impact: It is unlikely this subject impacts most interior finish installations, but for those impacted, the cost of construction will increase.

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

FS169–07/08
804.4.1

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

Revise as follows:

804.4.1 Minimum critical radiant flux. Interior floor finish and floor covering materials in exit enclosures, exit passageways and corridors shall not be less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2 and S. In all areas, floor covering materials shall comply with the DOCFF-1 “pill test” (CPSC 16 CFR, Part 1630).

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required, and materials complying with the DOC FF-1 “pill test” (CPSC 16 CFR, Part 1630) are permitted in any area where Class II materials are required.

Reason: This proposal requires a fire rating for floor covering materials in I-1 occupancies. In Group I-1 occupancies clients/patients are located for over 24 hours and this will provide a higher level of safety for these facilities and provide consistency between the IBC and Federal Regulations.

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

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

FS170–07/08
IBC [F] 903.5, IBC Chapter 35 (New)

Proponent: Jeff Hugo, National Fire Sprinkler Association

THIS PROPOSAL IS ON THE AGENDA OF THE IFC CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THIS COMMITTEE.

1. Revise as follows:

[F] 903.5 Testing and maintenance. Sprinkler systems shall be tested and maintained in accordance with ~~the *International Fire Code*~~ NFPA 25.

2. Add standard to Chapter 35 as follows:

NFPA

25-07 Inspection, Testing and Maintenance of Water-Based Fire Protection Systems

Reason: This change will allow the building official or the department to be able to enforce NFPA 25 in a direct way, in the cases where no fire official is present in the jurisdiction. While this section directly references the IFC to perform the same duty, this change will allow a more direct route for the building official.

The need for sprinkler maintenance after the installation is imperative. The installation of the sprinkler system initially had allowed for several trade ups and/or building size increase. Along with to insure occupant and fire fighter safety, along with property savings. While sprinkler systems have a high reliability rate (96% according to NFPA report) the need to maintain this system is no different than any other building system, with the exception of that no other installed system inside the building will give you so many benefits.

According to the USFA/NFPA report, "Four Years Later- A Second Needs Assessment of the U.S. Fire Service":

- There are roughly 1.1 million active firefighters in the US, of which just under three-fourths (73%) are volunteer firefighters. Nearly half the volunteers serve in communities with less than 2,500 population.
- An estimated 128.9 million (44%) are protected by departments that do not provide routine testing of active systems (e.g., fire sprinklers).
- An estimated 67.0 million people (23% of the US resident population in 2005) are protected by fire departments that do not provide plans review.
- An estimated 118.9 million (40%) are protected by departments that do not provide permit approval.
- An estimated 20.3 million people (7%) live in communities where no one conducts fire-code inspections. Two-fifths of this population lives in rural communities, with less than 2,500 population.

While some code officials may balk at this change, the purpose is to make them aware and have the ability to do something in their community about it. If we can assume according to the above data that ¾ of our fire service are volunteers then the chances that they having a fire prevention office are slimmer. In most rural cases, a jurisdiction has at least a building official and a fire department. With this code change a building with sprinklers could be enforced after the C of O by the building official through the IBC; the document where he or she feels the most comfortable.

This change is similar to F105-06/07 that altered 905.6.2 to allow a direct route to NFPA 14 for standpipes.

Bibliography

USFA/NFPA, Four Years Later- A Second Needs Assessment of the U.S. Fire Service , Oct. 2006
NFPA (Rohr, Hall), *U.S. EXPERIENCE WITH SPRINKLERS AND OTHER FIRE EXTINGUISHING EQUIPMENT*, Aug. 2005

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

Analysis: If this code change is approved the maintenance of the language will be the responsibility of the IFC Committee.

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

FS171–07/08
909.20.5

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

Revise as follows:

909.20.5 Stair pressurization alternative. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the vestibule is not required, provided that interior exit stairways are pressurized to a minimum of ~~0.15~~ 0.10 inches of water (~~37~~ 25 Pa) and a maximum of 0.35 inches of water (87 Pa) in the shaft relative to the building measured with all stairway doors closed under maximum anticipated ~~stack pressures~~ conditions of stack effect and wind effect.

Reason: The proposal changes the minimum stair pressurization from 0.15 to 0.10 inches of water. This easing of the pressurization requirement will reduce the cost and complexity of pressurized stairs, while retaining the full protection of pressurized stairs. A pressure difference of 0.10 inches of water is sufficient to prevent smoke from infiltrating the stairs under the extreme condition of a fully-involved fire in the space next to the stair door. This is supported by both engineering analysis and full scale fire tests (see NFPA 92A 2006; Klote and Milke 2002).

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

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

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

FS172–07/08
909.20.6.1

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

Revise as follows:

909.20.6.1 (Supp) Ventilation systems. Smokeproof enclosure ventilation systems shall be independent of other building ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following:

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.
3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. Control wiring and power wiring utilizing a 2-hour rated cable or cable system.
2. Where incased with not less than 2" of concrete.

Reason: Smokeproof enclosure ventilation systems, including stair enclosures required to be pressurized in accordance with IBC Section 1020.1.7, must have pressurization equipment and ductwork protected to the same fire resistance rating as the shaft they serve per Section 909.20.6.1. This code change will help to insure the system will function properly in the event of a fire in order to maintain a tenable environment for safe means of egress. The proposed change clarifies that control wiring and power wiring serving the pressurization fan are critical equipment components that must also be protected to insure overall system viability. The exceptions are intended to allow listed 2 hour rated wiring and/or 2" of concrete coverage (as permitted in NEC Section 230.6) as an acceptable alternative to fire rated barriers

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

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

FS173–07/08
1402.1

Proponent: Robert McCluer, RMc Code Consulting, representing Metal Construction Association

Revise definition as follows:

SECTION 1402
DEFINITIONS

METAL COMPOSITE MATERIAL (MCM) SYSTEM. An exterior wall ~~finish system~~ covering fabricated using MCM in a specific assembly including joints, seams, attachments, substrate, framing and other details as appropriate to a particular design.

Reason: The term exterior wall finish system is often associated only with the exterior insulation and finish systems (EIFS) that are commonly used as wall covering materials. A more proper reference to the defined term, Exterior Wall Covering, will avoid any confusion that may occur and the need to further specify what sections of the code apply to MCM.

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

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

FS174–07/08
1404.9

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

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

PART I – IBC FIRE SAFETY

Revise as follows:

1404.9 Vinyl siding. Vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D 3679 by an approved quality control agency.

Exception: Backed vinyl siding.

PART II – IRC BUILDING/ENERGY

Revise as follows:

R703.11 Vinyl siding. Vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D 3679 by an approved quality control agency.

Exception: Backed vinyl siding.

Reason: (IBC) A product has been brought into the market, known as “backed vinyl siding”, which has a vinyl (PVC) siding front and a foam plastic insulation backing. The backing is normally polystyrene foam insulation. The fire performance of polystyrene foam insulation is such that it has long been decided that it should not be used exposed in the built environment, without a thermal barrier. The fire test in ASTM D 3679-2004, for vinyl siding, is ASTM D 635 (or UL 94 HB). That test serves purely as a quality control tool for a material with good fire performance, such as vinyl siding. However, ASTM D 635 is an inappropriate fire test for either polystyrene foam or for a combined product that is composed of vinyl siding and polystyrene foam.

A standard specification needs to be developed for “backed vinyl siding” before it is allowed on the built environment. At present the building code states, in section 1405.13.1, when referring to the installation of vinyl siding, that “The siding shall be applied over sheathing or materials listed in Section 2304.6.” Those materials are contained in Table 2304.6, namely: wood boards, fiberboard, wood structural panel, M-S “Exterior Glue” and M-2 “Exterior Glue” particleboard, gypsum sheathing, gypsum wallboard and reinforced cement mortar.

A proposal has been made to the ASTM committee D20, on plastics, subcommittee D20.24, on plastic building products, for a revision of ASTM D 3679 to add “backed vinyl siding” into the standard specification. The proposal recommends the following two changes that are detrimental to fire safety: (a) that the same specification address the actual vinyl siding and the backed vinyl siding and (b) that the backing material be tested on its

own to ASTM E 84 (Steiner tunnel) and that it be required to meet simply a 75 flame spread index (the flame spread index for Class B). The fire performance of rigid PVC is inevitably very different from that of a combination of rigid PVC and polystyrene foam, and building products must be tested as used, namely the combination should be the product to be tested, because it has long been shown that independent testing of individual components of a composite product can give a misleading indication of the fire performance of the composite. It should also be noted that foam plastic insulation meeting a Class B is only allowed in the built environment when it is covered by a thermal barrier or otherwise protected, as described in Chapter 26 and in Chapter 8. Vinyl siding is not an adequate thermal barrier.

Backed vinyl siding should have a separate standard specification, that includes all the proper requirements and should not be included in the specification for vinyl siding. In the proposed revised ASTM D 3679 specification, there are separate provisions for the vinyl and the backing, of various kinds, showing that this is a distinctly different product from normal vinyl siding.

Key proposed changes to sections of ASTM D 3679:

1. Scope

1.1 This specification establishes requirements and test methods for the materials, dimensions, warp, shrinkage, impact strength, expansion, appearance, and windload resistance of extruded single-wall vinyl siding and backed vinyl siding ~~manufactured from rigid (unplasticized) PVC compound~~ . Methods of indicating compliance with this specification are also provided.

1.7 Unless otherwise specified, backed vinyl siding shall be tested with the backing in place.

3.2.1 Backed vinyl siding - a vinyl cladding product sold with manufacturer-installed backing material as an integral part of the cladding product. The vinyl cladding portion of backed vinyl siding meets the definition of vinyl siding. Backed vinyl siding is intended to be installed only with the integral backing.

4. Materials and Manufacture

4.1 The vinyl ~~siding~~ shall be made of one or more layers of poly (vinyl chloride) (PVC) compound. Any layers of materials other than poly (vinyl chloride) (PVC) compound shall be kept to less than 20% by volume.

4.3 The poly (vinyl chloride) siding material, when tested in accordance with Test Method D 635, shall not exceed an average extent of burn of 4 in. (100 mm), with an average time of burn not to exceed 10 s. A minimum sample thickness of 0.035 in. (0.9 mm) is required.

4.4 For backed vinyl siding, the backing shall have a Flame Spread Index not greater than 75 and a Smoke Developed Index not greater than 450 when tested separately under method E84.

5. Physical Requirements

5.0 The provisions of 5.1 through 5.6 apply only to the vinyl cladding, exclusive of any backing material. Where necessary to perform testing, any backing material shall be removed.

5.11 Windload Resistance—The siding panel(s) shall be able to withstand a minimum static test pressure of 15.73 lbf/ft^2 (753 Pa) when tested in accordance with 6.14. Backed siding shall be able to withstand a minimum test pressure of 30.58 lbf/ft^2 (2093 Pa) when tested in accordance with 6.14. If the manufacturer of backed siding provides documentation to support compensation for pressure equalization, the test pressure shall be determined from Annex A1 using the documented pressure equalization factor.

(IRC) A product has been brought into the market, known as “backed vinyl siding”, which has a vinyl (PVC) siding front and a foam plastic insulation backing. The backing is normally polystyrene foam insulation. The fire test in ASTM D 3679-2004, for vinyl siding, is ASTM D 635 (or UL 94 HB). That test serves purely as a quality control tool for a material with good fire performance, such as vinyl siding. However, ASTM D 635 is an inappropriate fire test for either polystyrene foam or for a combined product that is composed of vinyl siding and polystyrene foam. A standard specification needs to be developed for “backed vinyl siding” before it is allowed on the built environment. At present the residential code allows the installation of vinyl siding over “foam plastic sheathing into stud” but the vinyl siding itself needs to meet the ASTM D 3679 standard specification and Table R703.4 describes some support requirements and section R314.5.7 describes when foam plastic insulation siding backer board is permitted to be used without a thermal barrier. Section R314.5.7 specifies a maximum thickness of the foam plastic insulation, a maximum potential heat and that the foam plastic meet comply with one of the following: (1) be separated from the building by at least 2 inches of mineral fiber insulation, or (2) comply with one of the large scale fire tests, such as the NFPA 286 room corner test or (3) be installed over existing exterior wall finish in conjunction with re-siding.

A proposal has been made to the ASTM committee D20, on plastics, subcommittee D20.24, on plastic building products, for a revision of ASTM D 3679 to add “backed vinyl siding” into the standard specification. The proposal recommends the following two changes that are detrimental to fire safety: (a) that the same specification address the actual vinyl siding and the backed vinyl siding and (b) that the backing material be tested on its own to ASTM E 84 (Steiner tunnel) and that it be required to meet simply a 75 flame spread index (the flame spread index for Class B). The fire performance of rigid PVC is inevitably very different from that of a combination of rigid PVC and polystyrene foam, and building products must be tested as used, namely the combination should be the product to be tested, because it has long been shown that independent testing of individual components of a composite product can give a misleading indication of the fire performance of the composite. It should also be noted that foam plastic insulation meeting a Class B is only allowed in the building code environment when it is covered by a thermal barrier or otherwise protected, as described in Chapter 26 and in Chapter 8 of the IBC. Vinyl siding is not an adequate thermal barrier.

Backed vinyl siding should have a separate standard specification, that includes all the proper requirements and should not be included in the specification for vinyl siding. In the proposed revised ASTM D 3679 specification, there are separate provisions for the vinyl and the backing, of various kinds, showing that this is a distinctly different product from normal vinyl siding.

Key proposed changes to sections of ASTM D 3679:

1. Scope

1.1 This specification establishes requirements and test methods for the materials, dimensions, warp, shrinkage, impact strength, expansion, appearance, and windload resistance of extruded single-wall vinyl siding and backed vinyl siding ~~manufactured from rigid (unplasticized) PVC compound~~ . Methods of indicating compliance with this specification are also provided.

1.7 Unless otherwise specified, backed vinyl siding shall be tested with the backing in place.

3.2.1 Backed vinyl siding - a vinyl cladding product sold with manufacturer-installed backing material as an integral part of the cladding product. The vinyl cladding portion of backed vinyl siding meets the definition of vinyl siding. Backed vinyl siding is intended to be installed only with the integral backing.

4. Materials and Manufacture

.1 The vinyl ~~siding~~ shall be made of one or more layers of poly(vinyl chloride) (PVC) compound. Any layers of materials other than poly (vinyl chloride) (PVC) compound shall be kept to less than 20% by volume.

4.3 The poly (vinyl chloride) siding material, when tested in accordance with Test Method D 635, shall not exceed an average extent of burn of 4 in. (100 mm), with an average time of burn not to exceed 10 s. A minimum sample thickness of 0.035 in. (0.9 mm) is required.

4.4 For backed vinyl siding, the backing shall have a Flame Spread Index not greater than 75 and a Smoke Developed Index not greater than 450 when tested separately under method E84.

5. Physical Requirements

5.0 The provisions of 5.1 through 5.6 apply only to the vinyl cladding, exclusive of any backing material. Where necessary to perform testing, any backing material shall be removed.

5.11 Windload Resistance—The siding panel(s) shall be able to withstand a minimum static test pressure of 15.73 lbf/ft^2 (753 Pa) when tested

in accordance with 6.14. Backed siding shall be able to withstand a minimum test pressure of 30.58 lbf/ft^2 (2093 Pa) when tested in accordance with 6.14. If the manufacturer of backed siding provides documentation to support compensation for pressure equalization, the test pressure shall be determined from Annex A1 using the documented pressure equalization factor.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

FS175–07/08

202, 1402, 1403.2, 1404.11 (New), 1408 (New), 1412.1 (New), Chapter 35; IRC 202, R703.9 through R703.9.4.2 (New), Chapter 43

Proponent: Jesse J. Beitel, Hughes Associates, representing the EIFS Industry Members Association

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

PART I – IBC FIRE SAFETY

1. Add new definitions as follows:

SECTION 202
DEFINITIONS

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). See Section 1402.1

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. See Section 1402.1

SECTION 1402
DEFINITIONS

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). EIFS are nonstructural, non-load bearing, exterior wall cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. An EIFS that incorporates a means of drainage applied over a water-resistive barrier.

2. Revise as follows:

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in Section 1404.2, and a means for draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with the *International Energy Conservation Code*.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.

2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.3, shall not be required for an exterior wall envelope that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
   2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
   2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
   2.3. Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m_2).
   2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.
3. Exterior Insulation and Finish System (EIFS) complying with Section 1408.4.1

3. Add new text as follows:

1404.11 Exterior Insulation and finish system. Exterior Insulation and Finish System (EIFS) shall comply with ASTM E 2568. Exterior Insulation and Finish System (EIFS) with Drainage shall comply with ASTM E 2568 and ASTM E 2273.

SECTION 1408
EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

1408.1 General. The provisions of this section shall govern the materials, construction and quality of Exterior Insulation and Finish Systems (EIFS) for use as exterior wall coverings in addition to other applicable requirements of Chapters 7, 14, 16, 17 and 26.

1408.2 Performance characteristics. EIFS shall be constructed such that it meets the performance characteristics required in ASTM E 2568.

1408.3 Structural design. The underlying structural framing and substrate shall be designed and constructed to resist loads as required by Chapter 16.

1408.4 Weather resistance. EIFS shall comply with Section 1403 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's application instructions.

1408.4.1 EIFS with drainage. EIFS with drainage shall meet the requirements of ASTM E 2273 and is required on framed walls of Type V Construction, Group R1, R2, R3, and R4 occupancies.

1408.4.1.1 For EIFS with drainage, the water-resistive barrier shall comply with Section 1404.2 or ASTM E 2570.

1408.5 Installation. Installation of the EIFS and EIFS with Drainage shall be in accordance with the EIFS manufacturer's instructions.

1408.6 Special Inspections. EIFS installations shall comply with the provisions of Sections 1704.1 and 1704.12.

1704.12.1 Water-resistive barrier coating. A water-resistive barrier coating complying with ASTM E 2570 requires special inspection of the water-resistive barrier coating when installed over a sheathing substrate.

4. Add new standards to Chapter 35 as follows:

ASTM

E 2273-03	Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies
E 2568-07	Standard Specification for PB Exterior Insulation and Finish Systems (EIFS)
E 2570-07	Standard Test Method for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) for EIFS with Drainage

PART II – IRC BUILDING/ENERGY

1. Add new definitions as follows:

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). EIFS are nonstructural, non-load bearing, exterior wall cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat.

EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. An EIFS that incorporates a means of drainage applied over a water-resistive barrier.

2. Delete and substitute as follows:

~~**R703.9 Exterior insulation finish systems, general.** All Exterior Insulation Finish Systems (EIFS) shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section. Decorative trim shall not be face nailed through the EIFS. The EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.~~

~~**R703.9.1 Water-resistive barrier.** All EIFS shall have a water-resistive barrier applied between the underlying water-sensitive building components and the exterior insulation, and a means of draining water to the exterior of the veneer. A water-resistive barrier shall be compliant with ASTM D226Type I asphalt saturated felt or equivalent, shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and shall have all vertical joints lapped not less than 6 inches (152 mm).~~

~~**R703.9.2 Flashing, general.** Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8.~~

R703.9 Exterior Insulation and Finish System (EIFS)/EIFS with drainage

R703.9.1 Exterior Insulation and Finish System (EIFS). EIFS shall comply with ASTM E 2568.

R703.9.2 Exterior Insulation and Finish System (EIFS) with drainage. EIFS with drainage shall comply with ASTM E 2568 and ASTM E 2273.

R703.9.2.1 Water-resistive barrier. The water-resistive barrier shall comply with Section R703.2 or ASTM E 2570.

R703.9.2.2 Installation. The water-resistive barrier shall be applied over all building components.

> **Exception:** A water-resistive barrier shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.7 or R703.8.

R703.9.3 Flashing, general. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8

R703.9.4 EIFS/EIFS with drainage installation. All EIFS shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section.

R703.9.4.1 Terminations. The EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.

R703.9.4.2 Decorative trim. Decorative trim shall not be faced nailed though the EIFS.

3. Add standards to Chapter 43 as follows:

ASTM

E 2273-03	Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies
E 2568-07	Standard Specification for PB Exterior Insulation and Finish Systems (EIFS)
E 2570-07	Standard Test Method for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) for EIFS with Drainage

Reason: (IBC) Exterior Insulation and Finish Systems (EIFS) are non-load bearing, exterior wall coverings and have been used successfully in North America in both residential and commercial applications.

The use of EIFS in North America in the mid-1970's was due in large measure to the oil embargo and the resultant surge in interest in high energy efficiency wall systems, in addition to the aesthetics of the exterior appearance of the cladding. Today, EIFS are used extensively all over North America and in many others areas around the world, particularly in Europe and the Pacific Rim. EIFS have been used in the United States for more than thirty years and hold the #1 market share for all commercial claddings.

Because EIFS represented a relatively new concept in building technology at the time of its introduction in North America, it has become one of the most exhaustively tested cladding systems available on the market today. EIFS has been exposed to extensive ASTM / NFPA tests for fire performance, impact resistance, accelerated weathering, and a host of other conditions and performance attributes.

As EIFS were introduced into the U.S., the industry worked with the Evaluation Services of the three legacy Codes to develop Acceptance Criteria that included test requirements and criteria for its applications. Based on this work, the various manufacturers received ES Reports for their products and their various applications.

Existing IBC Section 1704.12 provides some EIFS specific requirements and there are many other existing code chapters/sections (Chapters 14, 16, 26, etc) that although not EIFS specific, do apply to EIFS. Additionally, existing ICC ES Acceptance Criteria (AC 235, AC 219, AC 212, etc.) further establish requirements for EIFS or related components and, based on these criteria, numerous EIFS manufacturers hold evaluation reports to demonstrate code compliance. Currently, the ES Reports provide the primary acceptance mechanism for EIFS.

The purpose of the proposed code change is to further develop existing code language based in part on newly adopted ASTM standards that are specific to EIFS. The following table provides a cross reference to the sections of the ASTM Standards that were previously addressed with the various requirements in the ICC Acceptance Criteria. The AC 219 “Acceptance Criteria for Exterior Insulation and Finish Systems” was converted to ASTM E 2568. The AC 235 “Acceptance Criteria for EIFS Clad Drainage Wall Assemblies” is the same as AC 219 but with the added requirement to test for Drainage Efficiency in accordance with ASTM E 2273. The AC 212 “Acceptance Criteria for Water-Resistive Barrier Coatings Used as Water-Resistive Barriers Over Exterior Sheathing” was converted to ASTM E 2570.

EIFS and EIFS with Drainage

AC 219 & 235 Test Requirements	ASTM E 2568	Difference between standards
Salt Spray – Section 4.2 ASTM B 117	Section 5.1.1 ASTM B 117	**None**
Tensile Bond – Section 4.3 ASTM C 297 or E 2134[1]	Section 5.1.1 ASTM C 297 or E 2134	**None**
Freeze Thaw - Section 4.4 ICC ES Procedure[2]	Section 5.1.1 ASTM E 2485 Section 9.2	**None**
Water Resistance – Section 4.5 ASTM D 2247	Section 5.1.1 ASTM D 2247	**None**
Fire Endurance – Section 4.6.1 ASTM E 119	Section 5.3.1 ASTM E 119	**None**
Noncombustible Construction – Section 4.6.2 NFPA 285	Section 5.3.1 NFPA 285	**None**
Ignition Resistance – Section 4.6.2 NFPA 268	Section 5.3.1 NFPA 268	**None**
Surface Burning – Section 4.6.2 ASTM E 84	Section 5.4 ASTM E 84	**None**
Structural Performance/Wind Load – Section 4.7.1 ASTM E 330	Section 5.5 ASTM E 330	**None**
Wind Driven Rain/Water Penetration – Section 4.8.1 ASTM E 331	Section 5.1.1 ASTM E331	**None**
Accelerated Weathering – Section 4.9 ASTM G153 or G 155	Section 5.1.1 ASTM G 153 or G 155	**None**
Drainage Test – Section 4.10 ASTM E 2273	Not applicable covered in Section 1404.12 of proposed code change	

Water-Resistive Barrier Coating

AC 212 Test Requirements	ASTM E 2570	Difference between standards
Tensile Bond – Section 4.1 ASTM C 297 or E 2134[1]	Sect. 8.1.1 Conduct tests in accordance with ASTM C 297 or E 2134	**None**
Freeze Thaw - Section 4.2 ICC ES Procedure[2]	Section 8.2.1 Conduct tests in accordance with ASTM E 2485 Section 9.2	**None**
Water Resistance – Section 4.3 ASTM D 2247	Section 8.3.1 Conduct tests in accordance with ASTM D 2247	**None**
Water Vapor Transmission – Section 4.4 ASTM E 96	Section 8.4.2 Conduct tests in accordance with ASTM E 96 Section 12	**None**
Water Penetration – Section 4.4 ASTM E 331	Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	**None**
Durability • Transverse load – Section 4.4.1 ASTM E 1233 Proc. A • Racking – Section 4.6.2 ASTM E 72 • Environmental Conditioning – Section 4.6.3 ASTM E 2570 • Water Penetration – Section 4.7.4 ASTM E 331	Section 8.5.1.1 Test specimen in accordance with ASTM E 1233 Proc. A Section 8.5.2.1 Apply load per ASTM E 72 Section 8.5.3[3] Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	**None** **None** **None** **None**
Weathering • Ultraviolet Light Exposure – Section 4.8.1 ICC ES procedure • Wet/Dry Cycling – Section 4.8.2 ICC ES procedure • Hydrostatic Pressure – Section 4.8.3 AATCC Test Method 127-1985	Section 8.6.1.1 Test specimens in accordance with ASTM D 2898[4] Section 8.6.2.1[5] Section 8.6.3.1 Samples shall be tested in accordance with Method 127-1985	**None** **None** **None**

[1] ASTM E 2134 is specifically for EIFS; ASTM C 297 is generic
[2] ICC ES procedure was converted to ASTM E 2485
[3] ICC ES procedure is listed in Section 8.5.3 of ASTM E 2570
[4] ASTM D 2898 is referenced with ICC ES conditions noted
[5] ICC ES procedure is listed in Section 8.6.2.1 of ASTM E 2570

In summary, the establishment of an EIFS specific code section that includes references to other applicable code sections and nationally recognized standards will enable building officials to determine code compliance for these well established systems in a manner that is consistent with other building materials currently in the IBC.

(IRC) Exterior Insulation and Finish Systems (EIFS) are non-load bearing, exterior wall coverings and have been used successfully in North America in both One and Two Family Dwellings as well as commercial applications.

The use of EIFS in North America in the mid-1970's was due in large measure to the oil embargo and the resultant surge in interest in high energy efficiency wall systems, in addition to the aesthetics of the exterior appearance of the cladding. Today, EIFS are used extensively all over North America and in many others areas around the world, particularly in Europe and the Pacific Rim. EIFS have been used in the United States for more than thirty years and hold the #1 market share for all commercial claddings.

Because EIFS represented a relatively new concept in building technology at the time of its introduction in North America, it has become one of the most exhaustively tested cladding systems available on the market today. EIFS has been exposed to extensive ASTM / NFPA tests for fire performance, impact resistance, accelerated weathering, and a host of other conditions and performance attributes.

As EIFS were introduced into the U.S., the industry worked with the Evaluation Services of the three legacy Codes to develop Acceptance Criteria that included test requirements and criteria for its applications. Based on this work, the various manufacturers received ES Reports for their products and their various applications.

Existing IRC Section R703.9 provides some EIFS specific requirements. Additionally, existing ICC ES Acceptance Criteria (AC 235, AC 219, AC 212, etc.) further establish requirements for EIFS or related components and, based on these criteria, numerous EIFS manufacturers hold evaluation reports to demonstrate code compliance. Currently, the ES Reports provide the primary acceptance mechanism for EIFS.

The purpose of the proposed code change is to further develop existing code language based in part on newly adopted ASTM standards that are specific to EIFS. The following table provides a cross reference to the sections of the ASTM Standards that were previously addressed with the various requirements in the ICC Acceptance Criteria. The AC 219 “Acceptance Criteria for Exterior Insulation and Finish Systems” was converted to ASTM E 2568. The AC 235 “Acceptance Criteria for EIFS Clad Drainage Wall Assemblies” is the same as AC 219 but with the added requirement to test for Drainage Efficiency in accordance with ASTM E 2273. The AC 212 “Acceptance Criteria for Water-Resistive Barrier Coatings Used as Water-Resistive Barriers Over Exterior Sheathing” was converted to ASTM E 2570.

EIFS and EIFS with Drainage

AC 219 & 235 Test Requirements	ASTM E 2568	Difference between standards
Salt Spray – Section 4.2 ASTM B 117	Section 5.1.1 ASTM B 117	**None**
Tensile Bond – Section 4.3 ASTM C 297 or E 2134[1]	Section 5.1.1 ASTM C 297 or E 2134	**None**
Freeze Thaw - Section 4.4 ICC ES Procedure[2]	Section 5.1.1 ASTM E 2485 Section 9.2	**None**
Water Resistance – Section 4.5 ASTM D 2247	Section 5.1.1 ASTM D 2247	**None**
Fire Endurance – Section 4.6.1 ASTM E 119	Section 5.3.1 ASTM E 119	**None**
Noncombustible Construction – Section 4.6.2 NFPA 285	Section 5.3.1 NFPA 285	**None**
Ignition Resistance – Section 4.6.2 NFPA 268	Section 5.3.1 NFPA 268	**None**
Surface Burning – Section 4.6.2 ASTM E 84	Section 5.4 ASTM E 84	**None**
Structural Performance/Wind Load – Section 4.7.1 ASTM E 330	Section 5.5 ASTM E 330	**None**
Wind Driven Rain/Water Penetration – Section 4.8.1 ASTM E 331	Section 5.1.1 ASTM E331	**None**
Accelerated Weathering – Section 4.9 ASTM G153 or G 155	Section 5.1.1 ASTM G 153 or G 155	**None**
Drainage Test – Section 4.10 ASTM E 2273	Not applicable covered in Section 1404.12 of proposed code change	

Water-Resistive Barrier Coating

AC 212 Test Requirements	ASTM E 2570	Difference between standards
Tensile Bond – Section 4.1 ASTM C 297 or E 2134[1]	Sect. 8.1.1 Conduct tests in accordance with ASTM C 297 or E 2134	**None**
Freeze Thaw - Section 4.2 ICC ES Procedure[2]	Section 8.2.1 Conduct tests in accordance with ASTM E 2485 Section 9.2	**None**
Water Resistance – Section 4.3 ASTM D 2247	Section 8.3.1 Conduct tests in accordance with ASTM D 2247	**None**
Water Vapor Transmission – Section 4.4 ASTM E 96	Section 8.4.2 Conduct tests in accordance with ASTM E 96 Section 12	**None**
Water Penetration – Section 4.4 ASTM E 331	Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	**None**
Durability • Transverse load – Section 4.4.1 ASTM E 1233 Proc. A • Racking – Section 4.6.2 ASTM E 72 • Environmental Conditioning – Section 4.6.3 ASTM E 2570 • Water Penetration – Section 4.7.4 ASTM E 331	 Section 8.5.1.1 Test specimen in accordance with ASTM E 1233 Proc. A Section 8.5.2.1 Apply load per ASTM E 72 Section 8.5.3[3] Section 8.5.4.1 Conduct tests in accordance with ASTM E 331	 **None** **None** **None** **None**
Weathering • Ultraviolet Light Exposure – Section 4.8.1 ICC ES procedure • Wet/Dry Cycling – Section 4.8.2 ICC ES procedure • Hydrostatic Pressure – Section 4.8.3 AATCC Test Method 127-1985	 Section 8.6.1.1 Test specimens in accordance with ASTM D 2898[4] Section 8.6.2.1[5] Section 8.6.3.1 Samples shall be tested in accordance with Method 127-1985	 **None** **None** **None**

[1] ASTM E 2134 is specifically for EIFS; ASTM C 297 is generic
[2] ICC ES procedure was converted to ASTM E 2485
[3] ICC ES procedure is listed in Section 8.5.3 of ASTM E 2570
[4] ASTM D 2898 is referenced with ICC ES conditions noted
[5] ICC ES procedure is listed in Section 8.6.2.1 of ASTM E 2570

In summary, the establishment of an EIFS specific code section that includes references to other applicable code sections and nationally recognized standards will enable building officials to determine code compliance for these well established systems in a manner that is consistent with other building materials currently in the IRC.

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

Analysis: A review of the standard proposed for inclusion in the code, ASTM E2273, E 2568 and E 2570 , for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008.

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

FS176–07/08

1402.1 (New), 1404.11 (New), 1404.11.1 (New), 1404.11.2 (New), 1405.18 (New), 1405.18.1 (New), Chapter 35 (New)

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

1. Add new definition as follows:

POLYPROPYLENE SIDING. A shaped material, made principally from polypropylene homopolymer, or copolymer, which in some cases may contain fillers and/or reinforcements, that is used to clad exterior walls of buildings.

2. Add new text as follows:

1404.11 Polypropylene siding. Polypropylene siding shall be certified and labeled as conforming to the requirements of ASTM D 7254 by an approved quality control agency and shall meet the requirements of 1404.11.1 or of 1404.11.2.

1404.11.1 Flame spread index. The polypropylene siding material shall exhibit a flame spread index of no more than 200 and shall not generate flaming drips when tested in accordance with ASTM E 84 or UL 723 with a test specimen that is either self-supporting by its own structural characteristics or held in place by added supports along the test specimen surface.

1404.11.2 Heat release. The polypropylene siding material shall exhibit a peak rate of heat release not exceeding 400 kW/m^2 when tested in accordance with ASTM E 1354 at an incident heat flux of 50 kW/m^2, in the horizontal orientation and at the thickness intended for use.

1405.18 Polypropylene siding. Polypropylene siding conforming to the requirements of this section and complying with 1404.11 shall be permitted on exterior walls of buildings of Type V construction located in areas where the basic wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1405.18.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform with the water-resistive barrier requirements in Section 1403. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall have a minimum 0.313-inch (7.9 mm) head diameter and 0.125-inch (3.18 mm) shank diameter.

The nails shall be corrosion resistant and shall be long enough to penetrate the studs or nailing strip at least 0.75 inch (19 mm). Where the siding is installed horizontally, the fastener spacing shall not exceed 16 inches (406 mm) horizontally and 12 inches (305 mm) vertically. Where the siding is installed vertically, the fastener spacing shall not exceed 12 inches (305 mm) horizontally and 12 inches (305 mm) vertically.

3. Add standard to Chapter 35 as follows:

ASTM

D 7254-07 Standard Specification for Polypropylene (PP) Siding

Reason: Polypropylene siding is being used in combustible construction although the IBC does not permit it. Therefore, it is important to regulate the use of polypropylene siding in a way that it can be used safely. A new standard specification has been issued for polypropylene siding, ASTM D 7254. The specification addresses many of the key requirements for the material. Unfortunately the fire test requirement in ASTM D 7254 is not explicit enough in that it does not explain that testing using ASTM E 84 (Steiner tunnel) for materials that are to be used exposed should ensure that the material stays in place during the test. The standards committee responsible for the ASTM E 84 fire test (ASTM E05) decided that this issue should be addressed in the code rather than in the standard itself. Polypropylene that has not been appropriately fire retarded will release abundant amount of heat, much more than other combustible sidings permitted by the code, such as wood siding or vinyl (PVC) siding.

When tested in the cone calorimeter, ASTM E 1354, under the same conditions, it was found that non fire retarded polypropylene exhibits a peak heat release rate of 1509 kW/m^2, while a non fire retarded PVC material exhibits a peak heat release rate of 183 kW/m^2, and a Douglas fir material exhibits a peak heat release rate of 221 kW/m^2. Such a very high heat release rate is unacceptable for a siding material.

Recent fire tests were also conducted in the Steiner tunnel, ASTM E 84, on a rigid PVC material 0.06 in. thick and it exhibited a flame spread index of 10, while a fire retarded polypropylene material 0.15 in. thick exhibited a flame spread index of 50. This is a very adequate value, in view of the fact that the polypropylene material remained in place during the ASTM E 84 test and did not generate flaming drips.

This shows that it is possible to use fire retarded polypropylene materials that give very adequate flame spread values and also very adequate heat release values. Consequently, polypropylene siding should only be used when it is shown to exhibit the appropriate fire performance.

ASTM E 1354, cone calorimeter, is a test that is already referenced in the ICC family of codes in both the IFC and the IBC, in both cases with the same pass-fail criteria used here. In the IFC the test is being used for plastic materials in large wastebaskets (section 808.1) and in the IBC it is used for plastic materials in children's playgrounds (section 402.11.1).

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

Analysis: A review of the standard proposed for inclusion in the code, ASTM D7254, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before January 15, 2008

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

FS177–07/08

1403.2, 1405.3 (New), 1405.3.1 (New), Table 1405.3.1 (New), 1405.3.2 (New), 1405.3.3 (New); IECC 402.5, 502.5; IRC N1102.5

Proponent: Joseph Lstiburek, Building Science Consulting

THESE PROPOSALS ARE ON THE AGENDA OF THE IBC FIRE SAFETY, THE IECC AND THE IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES AS 3 SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Revise as follows:

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in Section 1404.2, and a means for draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with ~~the *International Energy Conservation Code*~~ Section 1405.3.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.3, shall not be required for an exterior wall envelope that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
   2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.

2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
2.3. Exterior wall envelope assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m^2).
2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings or intersections of terminations with dissimilar materials.

2. Add new text as follows:

1405.3 Vapor retarders. Class I or II vapor retarders shall be provided on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.

Exceptions:

1. Basement walls.
2. Below grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

1405.3.1 Class III vapor retarders. Class III vapor retarders shall be permitted where any one of the conditions in Table 402.5.1 are met.

TABLE 1405.3.1
CLASS III VAPOR RETARDERS

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[1]
Marine 4	Vented cladding over OSB Vented cladding over Plywood Vented cladding over Fiberboard Vented cladding over Gypsum Insulated sheathing with R-value ≥ R2.5 over 2x4 wall Insulated sheathing with R-value ≥ R3.75 over 2x6 wall
5	Vented cladding over OSB Vented cladding over Plywood Vented cladding over Fiberboard Vented cladding over Gypsum Insulated sheathing with R-value ≥ R5 over 2x4 wall Insulated sheathing with R-value ≥ R7.5 over 2x6 wall
6	Vented cladding over Fiberboard Vented cladding over Gypsum Insulated sheathing with R-value ≥ R7.5 over 2x4 wall Insulated sheathing with R-value ≥ R11.25 over 2x6 wall
7 and 8	Insulated sheathing with R-value ≥ R10 over 2x4 wall Insulated sheathing with R-value ≥ R15 over 2x6 wall

1. Spray foam with a minimum density of 2 lbs/ft3 applied to the interior cavity side of OSB, plywood, fiberboard, or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

1405.3.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

Class I: Sheet polyethylene, non-perforated aluminum foil
Class II: Kraft faced fiberglass batts or paint with a perm rating greater than 0.1 and less than or equal to 1.0
Class III: Latex or enamel paint

1405.3.3 Minimum clear air spaces and vented openings for vented cladding. For the purposes of this section vented cladding shall include the following minimum clear air spaces.

1. Vinyl lap or horizontal aluminum siding applied over a weather resistive barrier as specified in this Chapter.
2. Brick veneer with a clear airspace as specified in this code.
3. Other approved vented claddings.

PART II – IECC

Delete without substitution as follows:

~~**402.5 (Supp) Vapor retarders.** Class I or II vapor retarders are required on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.~~

~~**Exceptions:**~~

~~1. Basement walls.~~
~~2. Below grade portion of any wall.~~
~~3. Construction where moisture or its freezing will not damage the materials.~~

~~**502.5 (Supp) Vapor retarders.** Class I or II vapor retarders are required on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4.~~

~~**Exceptions:**~~

~~1. Basement walls.~~
~~2. Below grade portion of any wall.~~
~~3. Construction where moisture or its freezing will not damage the materials.~~

PART III – IRC BUILDING/ENERGY

Revise as follows:

~~**N1102.5**~~ **(Supp) R602.1 Vapor retarders.** Class I or II vapor retarders are required on the interior side of frame walls in Zones 5, 6, 7, 8 and Marine 4

Exceptions:

1. Basement walls.
2. Below grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

~~**N1102.5.1**~~ **(Supp) R602.1.1 Class III vapor retarders.** Class III vapor retarders shall be permitted where any one of the conditions in Table ~~N1102.5.1~~ R602.1.1 are met.

TABLE ~~N1102.5.1~~ R602.1.1
CLASS III VAPOR RETARDERS

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[1]
Marine 4	Vented cladding over OSB Vented cladding over plywood Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≥ 2.5 over 2x4 wall Insulated sheathing with *R*-value ≥ 3.75 over 2x6 wall
5	Vented cladding over OSB Vented cladding over plywood Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≥ 5 over 2x4 wall Insulated sheathing with *R*-value ≥ 7.5 over 2x6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≥ 7.5 over 2x4 wall Insulated sheathing with *R*-value ≥ 11.25 over 2x6 wall
7 and 8	Insulated sheathing with *R*-value ≥ 10 over 2x4 wall Insulated sheathing with *R*-value ≥ 15 over 2x6 wall

1. Spray foam with a minimum density of 2 lbs/ft3 applied to the interior cavity side of OSB, plywood, fiberboard, or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

~~N1102.5.2~~ (Supp) R602.1.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

Class I: Sheet polyethylene, non-perforated aluminum foil
Class II: Kraft faced fiberglass batts
Class III: Latex or enamel paint

~~N1102.5.3~~ (Supp) R602.1.3 Minimum clear air spaces and vented openings for vented cladding. For the purposes of this section, vented cladding shall include the following minimum clear air spaces. Other openings with the equivalent vent area shall be permitted.

1. Vinyl lap or horizontal aluminum siding applied over a weather resistive barrier as specified in Table R703.4.
2. Brick veneer with a clear airspace as specified in Section R703.7.4.2.
3. Other approved vented claddings.

(Renumber subsequent sections)

Reason: In the last code cycle, the vapor retarder requirements in the IECC, IRC, and IBC were entirely revised. This change does not alter those requirements.

This change moves the new vapor retarder requirements into their proper location. The vapor retarder requirements are not "energy" requirements. The vapor retarder requirements are more logically related to the building code as a whole; therefore, those requirements are moved from the IECC into the IRC and IBC. Most of the resulting language in the IBC and IRC is intentionally identical. Because the I-codes inherit definitions from each other, the definition of vapor retarders can be used in any of the I-codes.

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

PART I – IB FIRE SAFETY

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

PART II – IECC

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

PART III – IRC BUILDING/ENERGY

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

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1405.4, 1406.2.2, 1407.11.1, 1407.11.2

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

Revise as follows:

1405.4 (Supp) Wood veneers. Wood veneers on exterior walls of buildings of Type I, II, III and IV construction shall be not less than 1 inch (25 mm) nominal thickness, 0.438-inch (11.1 mm) exterior hardboard siding or 0.375-inch (9.5 mm) exterior-type wood structural panels or particleboard and shall conform to the following:

1. The veneer shall not exceed ~~three stories~~ 40 feet (12.19 m) in height above ~~the~~ grade ~~plane~~. Where fire retardant-treated wood is used, the height shall not exceed ~~four stories~~ 60 feet (18.29 m) in height above grade.