# ICC CODE TECHNOLOGY COMMITTEE

## Area of Study - Balanced Fire Protection

## Vertical Openings Study Group

## Draft text changes: 2006 to 2009 IBC

**The following are DRAFT text changes to the 2006 IBC based on the 2006/2007 and 2007/2008 Code Development Cycles which will result in the 2009 IBC.**

**For those instruction lines that read "See xx-07/08 AMPC", the code changes and public comments noted are compiled at the end of this document (starting on page 44) and need to be incorporated into the text in order to determine the draft text revisions of the section in question.**

# CHAPTER 7
# FIRE AND SMOKE PROTECTION FEATURES

### SECTION 701
### GENERAL

***Section 701.1 Change to read as shown: (FS1-06/07)***

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

### SECTION 702
### DEFINITIONS

***Section 702.1 Add new definition of "Building Element" to read as shown: (FS4-06/07 Part I)***

**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.

***Section 702.1 Definition of "Fire Area" Relocated to Section 902.1: (G9-06/07; FS7-06/07)***

***Section 702.1 Change the definition of "Fireblocking" to read as shown: (FS4-07/08)***

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

***Section 702.1 Change the definition of "Fire Protection Rating" to read as shown: (FS1-07/08)***

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

***Section 702.1 Change the definition of "F Rating" to read as shown: (FS8-06/07 Part I)***

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

***Section 702.1 Change the definition of "T Rating" to read as shown: (FS8-06/07 Part I)***

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

***Section 702.1 Change the definition of "Through-Penetration Firestop System" to read as shown: (FS8-06/07 Part I)***

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

***Section 703.2 Change to read as shown: (FS9-06/07, FS10-06/07 Part I)***

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

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

***Section 703.2.1 Change to read as shown: (FS10-06/07 Part I)***

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

***Section 703.2.3 Change to read as shown: (FS10-06/07 Part I)***

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

***Section 703.3 Change to read as shown: (FS9-06/07, FS10-06/07 Part I)***

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

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

***Section 703.4.2 Change to read as shown: (FS11-06/07 Part I)***

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

***Section 703.5 "Fire-resistance-rated glazing" Relocated from Section 706.2.1 and changed to read as shown: (FS10-06/07 Part I, FS36-06/07)***

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

***Section 703.6 Add new section as shown: (FS14-06/07, FS10-07/08) Further revisions to 703.6 at FAH - See FS11-07/08 AMPC2.***

**703.6 Marking and identification.** Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

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

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

## INSERT ~~714~~ 704 HERE (See Section 714)

## Entire section 704 relocated to 705 - Renumber all sections as shown (FS118-07/08)

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

**~~704.1~~ 705.1 General.** No change to text

***Section 704.2 Renumber and change to read as shown: (FS14-07/08)***

**~~704.2~~ 705.2 Projections.** Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways shall also comply with Sections 1014.5 and 1023.1, respectively. Projections shall not extend beyond the distance determined by the following three methods, whichever results in the lesser projection:

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

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

~~704.2.1~~ 705.2.1 **Type I and II construction.** No change to text
~~704.2.2~~ 705.2.2 **Type III, IV or V construction.** No change to text
~~704.2.3~~ 705.2.3 **Combustible projections.** No change to text
~~704.3~~ 705.3 **Buildings on the same lot.** No change to text
~~704.4~~ 705.4 **Material.** No change to text

***Section 704.5 Renumber and change to read as shown: (FS16-07/08)***

~~704.5~~ 705.5 **Fire-resistance ratings.** Exterior walls shall be fire-resistance rated in accordance with Tables 601 and 602 and this section. The required fire-resistance rating of exterior walls with a fire separation distance of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

~~704.6~~ 705.6 **Structural stability.** No change to text

***Section 704.7 Renumber and change to read as shown: (FS10-06/07 Part I)***

~~704.7~~ 705.7**Unexposed surface temperature.** Where protected openings are not limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 or UL 263 shall not apply. Where protected openings are limited by Section 704.8, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E 119 or UL 263 shall not apply provided that a correction is made for radiation from the unexposed exterior wall surface in accordance with the following formula:

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

$A_e$ = Equivalent area of protected openings.
$A$ = Actual area of protected openings.
$A_f$ = Area of exterior wall surface in the story under consideration exclusive of openings, on which the temperature limitations of ASTM E 119 or UL 263 for walls are exceeded.
$F_{eo}$ = An "equivalent opening factor" derived from Figure 704.7 based on the average temperature of the unexposed wall surface and the fire-resistance rating of the wall.

**FIGURE ~~704.7~~ 705.7**
**EQUIVALENT OPENING FACTOR**
(No change to Figure)

***Section 705.8 Add new section to read as shown: (FS24-06/07)***

**705.8 Openings.** Openings in exterior walls shall comply with Sections 704.8.1 through 704.8.6.

***Table 704.8 Renumber and change table to read as shown: (FS22-06/07, FS24-06/07)***

**TABLE ~~704.8~~ 705.8**
**MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION**

| FIRE SEPARATION DISTANCE (feet) | DEGREE OF OPENING PROTECTION | ALLOWABLE AREA[a] |
|---|---|---|
| **0 to less than 3[b, c]** | Unprotected, Nonsprinklered (UP, NS) | Not Permitted |
| | Unprotected, sprinklered (UP, S)[i] | Not Permitted |
| | Protected (P) | Not Permitted |

| | | |
|---|---|---|
| **3 to less than 5[d, e]** | Unprotected, Nonsprinklered (UP, NS) | Not Permitted |
| | Unprotected, sprinklered (UP, S) [i] | 15% |
| | Protected (P) | 15% |
| **5 to less than 10[e, f]** | Unprotected, Nonsprinklered (UP, NS) | 10% [h] |
| | Unprotected, sprinklered (UP, S) [i] | 25% |
| | Protected (P) | 25% |
| **10 to less than 15[e, f, g]** | Unprotected, Nonsprinklered (UP, NS) | 15% [h] |
| | Unprotected, sprinklered (UP, S) [i] | 45% |
| | Protected (P) | 45% |
| **15 to less than 20[f, g]** | Unprotected, Nonsprinklered (UP, NS) | 25% |
| | Unprotected, sprinklered (UP, S) [i] | 75% |
| | Protected (P) | 75% |
| **20 to less than 25[f, g]** | Unprotected, Nonsprinklered (UP, NS) | 45% |
| | Unprotected, sprinklered (UP, S) [i] | No Limit |
| | Protected (P) | No Limit |
| **25 to less than 30[f, g]** | Unprotected, Nonsprinklered (UP, NS) | 70% |
| | Unprotected, sprinklered (UP, S) [i] | No Limit |
| | Protected (P) | No Limit |
| **30 or greater** | Unprotected, Nonsprinklered (UP, NS) | No Limit |
| | Unprotected, sprinklered (UP, S) [i] | Not Required |
| | Protected (P) | Not Required |

For SI: 1 foot = 304.8 mm.

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

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

P = Openings protected with an opening protective assembly in accordance with Section 704.8.2.

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

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

c. For openings in a fire wall for buildings on the same lot, see Section 705.8.

d. The maximum percentage of unprotected and protected openings shall be 25 percent for Group R-3 occupancies.

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

f. The area of unprotected and protected openings shall not be limited for Group R-3 occupancies, with a fire separation
distance of 5 feet or greater.
g. The area of openings in an open parking structure with a fire separation distance of 10 feet or greater shall not be limited.
h. Includes buildings accessory to Group R-3.
i. Not applicable to Group H-1, H-2 and H-3 occupancies.

***Section 704.8 Renumber and change to read as shown: (FS24-06/07; FS115-07/08)***

~~**704.8**~~ **705.8.1 Allowable area of openings.** The maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 704.8.

**Exceptions:**

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first story above grade either:

   1.1. Where the wall faces a street and has a fire separation distance of more than 15 feet (4572 mm); or
   1.2. Where the wall faces an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall not be less than 30 feet (9144 mm) in width, and shall have access from a street by a posted fire lane in accordance with the *International Fire Code*.

2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.

***Section 704.8.2 Renumber and change to read as shown: (FS24-06/07, FS1-07/08)***

~~**704.8.2**~~ **705.8.2 Protected openings.** Where openings are required to be protected, fire doors and fire shutters shall comply with Section 715.4 and fire window assemblies shall comply with Section 715.5.

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

***Sections 705.8.3, 705.8.4 Add new sections to read as shown: (FS24-06/07)***

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

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

$(Ap \div ap) + (Au \div au)$ 1 **(Equation 7-2)**

where:
*Ap* = Actual area of protected openings, or the equivalent area of protected openings, *Ae* (see Section 704.7).
*ap* = Allowable area of protected openings.
*Au* = Actual area of unprotected openings.
*au* = Allowable area of unprotected openings.

***Section 705.8.5 "Vertical separation of openings" Relocated from Section 704.9 and changed to read as shown. (FS10-06/07 Part I, FS24-06/07; G6-06/07 Part I)***

**705.8.5 Vertical separation of openings.** Openings in exterior walls in adjacent stories shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower story is not a protected opening with a fire protection rating of not less than 3/4 hour. Such openings shall be separated vertically at least 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of at least 1 hour or by flame barriers that extend

horizontally at least 30 inches (762 mm) beyond the exterior wall. Flame barriers shall also have a fire-resistance rating of at least 1 hour. The unexposed surface temperature limitations specified in ASTM E 119 or UL 263 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code.

**Exceptions:**

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

***Section 705.8.6 "Vertical exposure" Relocated from Section 704.10 and changed to read as shown: (FS24-06/07, FS25-06/07, FS20-07/08)***

**705.8.6 Vertical exposure**. For buildings on the same lot, opening protectives having a fire protection rating of not less than 3/4 hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the fire separation distance between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm).

**Exceptions**:

1. Opening protectives are not required where the roof assembly of the adjacent building or structure has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the exterior wall facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour.
2. Buildings on the same lot and considered as portions of one building in accordance with Section 704.3 are not required to comply with Section 704.8.6.

***Section 704.9 "Vertical separation of openings" Relocated to Section 705.8.5: (FS24-06/07)***

***Section 705.9 "Joints" Relocated from Section 704.13 with no change to current text: (FS24-06/07)***
**Section 705.9.1 Voids.** ***Relocated from 704.13.1 with no change to current text*****:** ***(FS24-06/07)***

***Section 704.10 "Vertical exposure" Relocated to Section ~~704.8.6~~ 705.8.6: (FS24-06/07)***

***Section 705.10 "Ducts and air transfer openings" Relocated from Section 704.14 with no change to current text: (FS24-06/07)***

***~~704.11~~ 705.11*** **Parapets**. No change to current text
***~~704.11.1~~ 705.11.1*** **Parapet construction.** No change to current text

***Section 704.12 "Opening protection" Delete without substitution: (FS24-06/07)***

***Section 704.12.1 "Unprotected openings" Delete without substitution: (FS24-06/07)***

***Section 704.13 "Joints" Relocated to Section 705.9: (FS24-06/07)***

***Section 704.14 "Ducts and air transfer openings" Relocated to Section 705.10: (FS24-06/07)***

## Entire section 705 relocated to 706 - Renumber all sections as shown (FS118-07/08)

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

**~~705.1~~ 706.1 General**

***Section* 705.1.1 *Renumber and change to read as shown: (FS22-07/08 Part I)***

~~705.1.1~~ 706.1.1 **Party walls.** Any wall located on a lot line between adjacent buildings, which is used or adapted for joint service between the two buildings, shall be constructed as a firewall in accordance with Section 705. Party walls shall be constructed without openings and shall create separate buildings.

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

~~705.2~~ 706.2 **Structural stability.** No change to text
~~705.3~~ 706.3 **Materials.** No change to text

~~705.4~~ 706.4 **Fire-resistance rating** No change to text

***Table* 705.4 *Renumber and change to read as shown: (FS26-07/08) Footnote further revised based on FAH - See FS26-07/08 AMPC***

**TABLE ~~705.4~~ 706.4**
**FIRE WALL FIRE-RESISTANCE RATINGS**

(Portions of table not shown remain unchanged)

a. In Type II or V construction, walls are permitted to have a 2 hour fire-resistance-rating.
b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.4 and 415.5.

~~705.5~~ 706.5 **Horizontal continuity.** No change to text

***Section* 705.5.1 *Renumber and change to read as shown: (FS29-06/07, FS31-06/7)***

~~705.5.1~~ 706.5.1 **Exterior walls.** Where the fire wall intersects exterior walls, the fire-resistance rating and opening protection of the exterior walls shall comply with one of the following:

1. The exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with 3/4 hour protection where opening protections is required by Section 704.8 The fire-resistance rating of the exterior wall shall extend a minimum of 4 feet (1220 mm) on each side of the intersection of the firewall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.
2. Buildings or spaces on both sides of the intersecting firewall shall assume to have an imaginary lot line at the firewall and extending beyond the exterior of the firewall. The location of the assumed line in relation to the exterior walls and the firewall shall be such that the exterior wall and opening protection meet the requirements set forth in Section 704.5 and 704.8. Such protection is not required for exterior walls terminating at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad).

~~705.5.2~~ 706.5.2 **Horizontal projecting elements.** No change to text

***Section* 705.6 *Renumber and change to read as shown: (FS32-06/07; FS29-07/08)***

~~705.6~~ 706.6 **Vertical continuity.** Fire walls shall extend from the foundation to a termination point at least 30 inches (762 mm) above both adjacent roofs.

**Exceptions:**

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

2.1. The lower roof assembly within 4 feet (1220 mm) of the wall has not less than a 1-hour fire-resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour.

2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.
2.3. Each building shall be provided with not less than a Class B roof covering.

3. Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck, or slabs where both buildings are provided with not less than a Class B roof covering. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.

4. In buildings of Type III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks provided:

4.1. There are no openings in the roof within 4 feet (1220 mm) of the fire wall,
4.2. The roof is covered with a minimum Class B roof covering, and
4.3. The roof sheathing or deck is constructed of fire-retardant-treated wood for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected with 5/8 inch (15.9 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of 2-inch (51 mm) nominal ledgers attached to the sides of the roof framing members for a minimum distance of 4 feet (1220 mm) on both sides of the fire wall.

5. In buildings designed in accordance with Section 509.2, fire walls located above the 3 hour horizontal assembly required by Section 509.2 item 1 shall be permitted to extend from the top of this horizontal assembly.

~~705.6.1~~ **706.6.1 Stepped buildings.** No change to text
~~705.7~~ **706.7 Combustible framing in fire walls.** No change to text
***Section 705.8 Renumber and change to read as shown: (FS33-06/07)*** No change to text

~~705.8~~ **706.8 Openings.** Each opening through a fire wall shall be protected in accordance with Section 715.4 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~~ **706.9 Penetrations.** No change to text
~~705.10~~ **706.10 Joints.** No change to text

***Section* 705.11 *Renumber and change to read as shown: (FS34-06/07)***

~~705.11~~ **706.11 Ducts and air transfer openings.** Ducts and air transfer openings shall not penetrate fire walls.

**Exception:** Penetrations by ducts and air transfer openings of fire walls that are not on a lot line shall be allowed provided the penetrations comply with Section 716. The size and aggregate width of all openings shall not exceed the limitations of Section 705.8.

## Entire section 706 relocated to 707 - Renumber all sections as follows (FS118-07/08)

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

~~706.1~~ **707.1 General.** No change to text
~~706.2~~ **707.2 Materials.** No change to text

***Section 706.2.1 "Fire-resistance-rated glazing" Relocated to Section 703.5: (FS36-06/07)***

~~706.3~~ **707.3 Fire-resistance rating.** No change to text
~~706.3.1~~ **707.3.1 Shaft enclosures.** No change to text
~~706.3.2~~ **707.3.2 Exit enclosures.** No change to text

***Section 706.3.3 Renumber and change to read as shown: (FS37-06/07)***

~~706.3.3~~ **707.3.3 Exit passageway**. The fire-resistance rating of the fire barrier separating building areas from an exit passageway shall comply with Section 1021.3.

~~706.3.4~~ **707.3.4 Horizontal exit.** No change to text
~~706.3.5~~ **707.3.5 Atriums.** No change to text

**Section 706.3.6 Renumber and change to read as shown: (G131-06/07)**

~~706.3.6~~ **707.3.6 Incidental use areas.** The fire barrier separating incidental uses from other spaces in the building shall have a fire-resistance rating of not less than that indicated in Table 508.2.

~~706.3.7~~ **707.3.7 Control areas.** No change to text

***Section 706.3.8 Renumber and change to read as shown: (G131-06/07)***

~~706.3.8~~ **707.3.8 Separated occupancies.** Where the provisions of Section 508.3.3 are applicable, the fire barrier separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Table 508.3.3 based on the occupancies being separated.

**Section 706.3.9** ***Renumber and change to read as shown: (FS37-06/07; FS34-07/08)***

~~706.3.9~~ **707.3.9 Fire areas.** The fire barriers or horizontal assemblies, or both, separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 706.3.9. The fire barriers or horizontal assemblies, or both, separating fire areas of mixed occupancies shall have a fire-resistance rating of not less than the highest value indicated in Table 706.3.9 for the occupancies under consideration.

***Table 706.3.9 Renumber and change to read as shown: (FS118-07/08)***

**Table ~~706.3.9~~ 707.3.9**
**FIRE-RESISTANCE RATING REQUIREMENTS FOR**
**FIRE BARRIER ASSEMBLIES OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS**
No change to table

~~706.4~~ **707.4 Exterior walls.** No change to text

***Section 706.5 Renumber and change to read as shown: (FS40-06/07; G131-06/07; FS35-07/08; FS37-07/08; G156-07/08 Part II)***

~~706.5~~ **707.5 (Supp) Continuity.** Fire barriers shall extend from the top of the floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such fire barriers shall be continuous through concealed spaces, such as the space above a suspended ceiling.

***Section 707.5.1 Add new section as shown: (FS35-07/08; FS37-07/08)***

**707.5.1 Supporting Construction.** The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported. Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 717.2 at every floor level.

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

***Section 706.6 Renumber and change to read as shown: (FS10-06/07 Part I, FS42-06/07, FS43-06/07; G9-06/07,***

***FS1-07/08; E130-07/08)***

~~**706.6**~~ **707.6 Openings.** Openings in a fire barrier shall be protected in accordance with Section 715. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 $m^2$). 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 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.
5. Openings shall not be limited to 156 square feet (15m2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door assembly in a fire barrier separating an exit enclosure from an exit passageway in accordance with Section 1020.2.1.

~~**706.7**~~ **707.7 Penetrations.** No change to text

~~**706.7.1**~~ **707.7.1 Prohibited penetrations.** No change to text

***Section 706.8 Renumber and change to read as shown: (FS37-07/08)***

~~**706.8**~~ **707.8 Joints.** Joints made in or between fire barriers, and joints made at the intersection of fire barriers with underside of the floor or roof sheathing, slab or deck above shall comply with Section 713.

~~**706.9**~~ **707.9 Ducts and air transfer openings.** No change to text

## Entire section 707 relocated to 708 - Renumber all sections as shown (fS118-07/08)

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

***Section 707.1 Renumber and change to read as shown: (FS38-07/08)***

~~**707.1**~~ **708.1 General.** The provisions of this section shall apply to shafts 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.

***Section 707.2 Renumber and change to read as shown: (FS48-06/07; FS40-07/08; FS41-07/08; CCC 07)***

~~**707.2**~~ **708.2 Shaft enclosure required.** Openings through a floor/ceiling assembly shall be protected by a shaft enclosure complying with this Section.

**Exceptions:**

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

2.2. Where the opening is protected by approved power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.11 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release there from.

3. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable and vents protected in accordance with Section 712.4.

4. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 716.6. Grease ducts shall be protected in accordance with the *International Mechanical Code*.

5. In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.

6. A shaft enclosure is not required for approved masonry chimneys where annular space is fireblocked at each floor level in accordance with Section 717.2.5.

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

7.1. Does not connect more than two stories.

7.2. Is not part of the required means of egress system.

7.3. Is not concealed within the construction of a wall or a floor/ceiling assembly.

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

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

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

7.7. Is limited to the same smoke compartment.

8. A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.

9. A shaft enclosure is not required for floor openings between a mezzanine and the floor below.

10. A shaft enclosure is not required for joints protected by a fire-resistant joint system in accordance with Section 713.

11. A shaft enclosure shall not be required for floor openings created by unenclosed stairs or ramps in accordance with Exception 3 or 4 in Section 1016.1.

12. Floor openings protected by floor fire doors in accordance with Section 711.8.

13. Where permitted by other sections of this code.

14. A shaft enclosure is not required for elevator hoistways in open or enclosed parking garages that serve only the parking garage.

15. In open or enclosed parking garages a shaft enclosure is not required to enclose mechanical exhaust or supply duct systems when such duct system is contained within and serves only the parking garage.

***Section ~~707.3~~ 708.3 Materials.*** No change to text

***Section 707.4 Renumber and Change to read as shown: (FS43-07/08)***

**~~707.4~~ 708.4 Fire-resistance rating.** Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours. Shaft enclosures shall meet the requirements of Section 703.2.1.

***Section ~~707.5~~ 708.5 Continuity.*** No change to text
***Section ~~707.6~~ 708.6 Exterior walls.*** No change to text
***Section ~~707.7~~ 708.7 Openings.*** No change to text
***Section ~~707.7.1~~ 708.7.1 Prohibited openings.*** No change to text

***Section ~~707.8~~ 708.8 Penetrations.*** No change to text
***Section ~~707.8.1~~ 708.8.1 Prohibited penetrations.*** No change to text
***Section ~~707.9~~ 708.9 Joints.*** No change to text
***Section ~~707.10~~ 708.10 Ducts and air transfer openings.*** No change to text

***Section 707.11 Renumber and Change to read as shown: (FS37-06/07)***

**~~707.11~~ 708.11 Enclosure at the bottom**. Shafts that do not extend to the bottom of the building or structure shall comply with one of the following:

1. They shall be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure.
2. They shall terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating and opening 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 or penetrations of the shaft enclosure to the interior of the building except at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 717.3.1 for draftstopping, or the room shall be provided with an approved automatic fire suppression system.
2. A shaft enclosure containing a refuse chute or laundry chute shall not be used for any other purpose and shall terminate in a room protected in accordance with Section 707.13.4.
3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

***Section ~~707.12~~ 708.12 Enclosure at the top.*** No change to text
***Section ~~707.13~~ 708.13 Refuse and laundry chutes.*** No change to text
***Section ~~707.13.1~~ 708.13.1 Refuse and laundry chute enclosures.*** No change to text
***Section ~~707.13.2~~ 708.13.2 Materials.*** No change to text

***Section 707.13.3 Renumber and change to read as shown: (FS37-06/07)***

**~~707.13.3~~ 708.13.3 Refuse and laundry chute access rooms**. Access openings for refuse and laundry chutes shall be located in rooms or compartments enclosed by not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Openings into the access rooms shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. Doors shall be self- or automatic closing upon the detection of smoke in accordance with Section 715.4.7.3.

***Section 707.13.4 Renumber and change to read as shown: (FS37-06/07)***

**~~707.13.4~~ 708.13.4 Termination room**. Refuse and laundry chutes shall discharge into an enclosed room separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Openings into the termination room shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour. Doors shall be self- or automatic closing upon the detection of smoke in accordance with Section 715.4.7.3. Refuse chutes shall not terminate in an incinerator room. Refuse and laundry rooms that are not provided with chutes need only comply with Table 508.2.

***Section ~~707.13.5~~ 708.13.5 Incinerator room.*** No change to text
***Section ~~707.13.6~~ 708.13.6 Automatic sprinkler system.*** No change to text

***Section 707.14.1 Renumber and change to read as shown: (FS52-06/07; FS49-07/08, FS56-07/08, FS58-07/08, G14-07/08) Item 4 further revised by FAH - See FS53-07/08 AMPC***

~~**707.14.1**~~ **708.14.1 Elevator lobby.** An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby enclosure shall separate the elevator shaft enclosure doors from each floor by fire partitions. In addition to the requirements in Section 708 for fire partitions, doors protecting openings in the elevator lobby enclosure walls shall also comply with Section 715.4.3 as required for corridor walls and penetrations of the elevator lobby enclosure by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 716.5.4.1. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

**Exceptions:**

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-2 and I-3 and high-rise buildings enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. In addition to the requirements in Section 710 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 710.5.2, 710.5.3, and 715.4.7 and duct penetrations of the smoke partitions shall be protected as required for corridors in accordance with Section 716.5.4.1.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.
7. Enclosed elevator lobbies are not required where the elevator serves only open parking garages in accordance with Section 406.3.

***Section 708.14.1.1 Add new text to read as shown: (FS60-07/08)***

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

***Section ~~707.14.2~~ 708.14.2 Enclosed elevator lobby.*** No change to text

***Section 707.14.2.1 Renumber and change to read as shown: (FS55-06/07, FS56-06/07) Section 707.14.2.1 further revised at FAH - See FS67-07/08 AMPC***

~~**707.14.2.1**~~ **708.14.2.1 (Supp) Pressurization requirements.** 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.

***Section ~~707.14.2.2~~ 708.14.2.2 Ducts for system.*** No change to text
***Section ~~707.14.2.3~~ 708.14.2.3 Fan system.*** No change to text
***Section ~~707.14.2.3.1~~ 708.14.2.3.1 Fire resistance.*** No change to text
***Section ~~707.14.2.3.2~~ 708.14.2.3.2 Smoke detection.*** No change to text

***Section 707.14.2.3.3 Renumber and change to read as shown: (FS60-06/07)***

~~**707.14.2.3.3**~~ **708.14.2.3.3 Separate systems.** A separate fan system shall be used for each elevator hoistway.

***Section ~~707.14.2.3.4~~ 708.14.2.3.4 Fan capacity.*** No change to text
***Section ~~707.14.2.4~~ 708.314.2.4 Standby power.*** No change to text

***Section 707.14.2.5 Renumber and change to read as shown: (FS68-07/08)***

~~**707.14.2.5**~~ **708.14.2.5 Activation of pressurization system.** The elevator pressurization system shall be activated upon activation of the building fire alarm system or upon activation of the elevator lobby smoke detectors. Where both a building fire alarm system and elevator lobby smoke detectors are present, each shall be independently capable of activating the pressurization system.

***Section 708.14.2.6 Add new text to read as shown: (FS69-07/08, FS118-07/08)***

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

## Entire section 708 relocated to 709 - Renumber all sections as shown (FS118-07/08)

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

***Section 708.1 Renumber and change to read as shown: (FS66-06/07)***

~~**708.1**~~ **709.1 General.** The following wall assemblies shall comply with this section.

1. Walls separating dwelling units in the same building as required by Section 419.2.
2. Walls separating sleeping units in the same building as required by Section 419.2.
3. Walls separating tenant spaces in covered mall buildings as required by Section 402.7.2.
4. Corridor walls as required by Section 1017.1.
5. Elevator lobby separation as required by Section 707.14.1.

***Section ~~707.2~~ 708.2 Materials*** No change to text

***Section 708.3 Renumber and change to read as shown: (FS68-06/07; E159-07/08)***

~~**708.3**~~ **709.3 Fire-resistance rating.** Fire partitions shall have a fire-resistance rating of not less than 1 hour.

**Exceptions:**

1. Corridor walls permitted to have a 0.5 hour fire-resistance rating by Table 1017.1.
2. Dwelling unit and sleeping unit separations in buildings of Type IIB, IIIB and VB construction shall have fire-resistance ratings of not less than ½ hour in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

***Section 708.4 Renumber and change to read as shown: (FS69-06/07; G6-06/07 Part I; CCC 07)***

~~**708.4**~~ **709.4 Continuity**. Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above or to the fire-resistance-rated floor/ceiling or roof/ceiling assembly above, and shall be securely attached thereto. If the partitions are not continuous to the sheathing, deck or slab, and where constructed of combustible construction, the space between the ceiling and the sheathing, deck or slab above shall be fireblocked or draftstopped in accordance with Sections 717.2 and 717.3 at the partition line. The supporting construction shall be protected to afford the required fire-resistance rating of the wall supported, except for walls separating tenant spaces in covered mall buildings, walls separating dwelling units, walls separating sleeping units and corridor walls, in buildings of Types IIB, IIIB, and VB construction.

**Exceptions**:

1. The wall need not be extended into the crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.
2. Where the room-side fire-resistance-rated membrane of the corridor is carried through to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above, the ceiling of the corridor shall be permitted to be protected by the use of ceiling materials as required for a 1-hour fire-resistance-rated floor or roof system.
3. Where the corridor ceiling is constructed as required for the corridor walls, the walls shall be permitted to terminate at the upper membrane of such ceiling assembly.
4. The fire partition separating tenant spaces in a covered mall building, complying with Section 402.7.2, are not required to extend beyond the underside of a ceiling that is not part of a fire-resistance-rated assembly. A wall is not required in attic or ceiling spaces above tenant separation walls.
5. Fireblocking or draftstopping is not required at the partition line in Group R-2 buildings that do not exceed four stories above grade plane, provided the attic space is subdivided by draftstopping into areas not exceeding 3,000 square feet (279 $m^2$) or above every two dwelling units, whichever is smaller.
6. Fireblocking or draftstopping is not required at the partition line in buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, provided that automatic sprinklers are installed in combustible floor/ceiling and roof/ceiling spaces.

***Section ~~708.5~~ 709.5 Exterior walls (FS118-07/08)*** No change to text
***Section ~~708.6~~ 709.6 Openings (FS118-07/08)*** No change to text
***Section ~~708.7~~ 709.7 Penetrations (FS118-07/08)*** No change to text
***Section ~~708.8~~ 709.8 Joints (FS118-07/08)*** No change to text
***Section ~~708.9~~ 709.9 Ducts and air transfer openings (FS118-07/08)*** No change to text

## Entire section 709 relocated to 710 - Renumber all sections as shown (FS118-07/08)

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

***Section ~~709.1~~ 710.1 General*** No change to text
***Section ~~709.2~~ 710.2 Materials*** No change to text
***Section ~~709.3~~ 710.3 Fire-resistance rating*** No change to text
***Section ~~709.4~~ 710.4 Continuity*** No change to text

***Section 709.5 Renumber and change to read as shown: (FS75-07/08; FS76-07/08)***

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

**Exceptions:**
1. In Group I-2, where doors are installed across corridors, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances, and shall not have undercuts in excess of ¾", louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and shall be automatic closing by smoke detection in accordance with Section 715.4.7.3. Where permitted by the door manufacturer's listing, positive-latching devices are not required.

2. In Group I-2, horizontal sliding doors installed in accordance with section 1008.1.3.3 and protected in accordance with Section 715.

***Section ~~709.6~~ 710.6 Penetrations*** No change to text
***Section ~~709.7~~ 710.7 Joints*** No change to text

***Section ~~709.8~~ 710.8 Ducts and air transfer openings*** No change to text

## Entire section 710 relocated to 711 - Renumber all sections as shown (FS118-07/08)

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

**Section ~~710.1~~ 711.1 General** No change to text
**Section ~~710.2~~ 711.2 Materials** No change to text
**Section ~~710.3~~ 711.3 Fire-resistance rating** No change to text
**Section ~~710.4~~ 711.4 Continuity** No change to text
**Section ~~710.5~~ 711.5 Openings** No change to text
**Section ~~710.5.1~~ 711.5.1 Louvers** No change to text

***Section 710.5.2 Renumber and change to read as shown: (FS77-07/08, FS118-07/08)***

**~~710.5.2~~ 711.5.2 Smoke and draft control doors.** Where required elsewhere in the code, doors in smoke partitions shall meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.015424 $m^3/(s\ m^2)$) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature test and the elevated temperature exposure test. Installation of smoke doors shall be in accordance with NFPA 105.

**Section ~~710.5.3~~ 711.5.3 Self- or automatic-closing doors** No change to text
**Section ~~710.6~~ 711.6 Penetrations and joints** No change to text
**Section ~~710.7~~ 711.7 Ducts and air transfer openings** No change to text

## Entire section 711 relocated to 712 - Renumber all sections as shown (FS118-07/08)

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

***Section 711.1 Renumber and change to read as shown: (FS75-06/07)***

**~~711.1~~ 712.1 General.** 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.

**Section ~~711.2~~ 712.2 Materials** No change to text
***Section 711.3 Renumber and change to read as shown: (FS66-06/07)***

**~~711.3~~ 712.3 Fire-resistance rating**. The fire-resistance rating of floor and roof assemblies shall not be less than that required by 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.

**Section ~~711.3.1~~ 712.3.1 Ceiling panels** No change to text

***Section 711.3.2 Renumber and change to read as shown: (FS10-06/07 Part I)***

**~~711.3.2~~ 712.3.2 Access doors.** Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and

roof/ceiling assemblies provided such doors are tested in accordance with ASTM E 119 or UL 263 as horizontal assemblies and labeled by an approved agency for such purpose.

***Section 711.3.3 Renumber and change to read as shown: (FS20-07/08)***

~~711.3.3~~ 712.3.3 **Unusable space.** In 1-hour fire-resistance-rated floor assemblies, the ceiling membrane is not required to be installed over unusable crawl spaces. In 1-hour fire-resistance-rated roof assemblies, the floor membrane is not required to be installed where unusable attic space occurs above.

***Section 711.4 Renumber and Change to read as shown: (FS69-06/07, FS20-07/08)***

~~711.4~~ 712.4 **Continuity**. Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 707.2, 712.4, 713 and 1020.1. Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Unprotected skylights shall not be permitted in roof assemblies 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.

***Section 711.5 Renumber and change to read as shown: (FS80-07/08)***

~~711.5~~ 712.5 **Penetrations.** Penetrations of horizontal assemblies shall comply with Section 712.

***Section 711.6 Renumber and change to read as shown: (FS80-07/08)***

~~711.6~~ 712.6 **Joints.** Joints made in or between horizontal assemblies shall comply with Section 713. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

**Section ~~711.7~~ 712.7 Ducts and air transfer openings** No change to text
**Section ~~711.8~~ 712.8 Floor fire door assemblies** No change to text

***New section added 711.9 from FAH - See FS81-07/08 Part I AMPC***

## Entire section 712 relocated to 713 - Renumber all sections as shown (FS118-07/08)

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

**Section ~~712.1~~ 713.1 Scope** No change to text

***Section 713.1.1 "Ducts and air transfer openings" Relocated from Section 712.3.3 and changed to read as shown: (FS46-06/07)***

**713.1.1 Ducts and air transfer openings.** Penetrations of fire-resistance-rated walls by ducts that are not protected with dampers shall comply with Sections 712.2 through 712.3.4. Penetrations of horizontal assemblies not protected with a shaft as permitted by Exception #4 of Section 707, 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.

**Section ~~712.2~~ 713.2 Installation details** No change to text

***Section 712.3 Renumber and change to read as shown: (FS37-06/07, FS77-06/07)***

~~712.3~~ 713.3 **Fire-resistance-rated walls.** 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.

***Section 712.3.1 Renumber and change to read as shown: (FS10-06/07 Part I)***

~~712.3.1~~ 713.3.1 **Through penetrations.** Through penetrations of fire-resistance-rated walls shall comply with Section 712.3.1.1 or 712.3.1.2.

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

1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (0.0929 $m^2$), 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 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

**Section ~~712.3.1.1~~ 713.3.1.1 Fire-resistance-rated** No change to text
**Section ~~712.3.1.2~~ 713.3.1.2 Through penetration** No change to text

***Section 712.3.2 Renumber and change to read as shown: (FS82-06/07, FS85-06/07, FS89-07/08, FS90-07/08)***

~~712.3.2~~ 713.3.2 **Membrane penetrations.** Membrane penetrations shall comply with Section 712.3.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire-resistance will not be reduced.

**Exceptions:**

1. Membrane penetrations of maximum two-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 $m^2$) 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:
    1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual non-communicating stud cavities;
    1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;
    1.3. By solid fireblocking in accordance with Section 717.2.1;
    1.4. By protecting both outlet boxes with listed putty pads; or
    1.5. By other listed materials and methods.
2. Membrane penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless listed otherwise. Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
    2.1. By the horizontal distance specified in the listing of the electrical boxes;
    2.2. By solid fireblocking in accordance with Section 717.2.1;

2.3. By protecting both boxes with listed putty pads; or

2.4. By other listed materials and methods.

3. Membrane penetrations by electrical boxes of any size or type, which have been listed as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

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

5. The annular space created by the penetration of an automatic sprinkler, provided it is covered by a metal escutcheon plate.

***Section 712.3.3 "Ducts and air transfer openings" Relocated to Section 713.1.1: (FS46-06/07)***

**Section ~~712.3.4~~ 713.3.3 Dissimilar materials** No change to text

***Section 712.4 Renumber and change to read as shown: (FS75-06/07, FS86-06/07; CCC 07)***

**~~712.4~~ 713.4 Horizontal assemblies.** Penetrations of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly not required to be enclosed in a shaft by Section 707.2 shall be protected in accordance with Sections 712.4.1 through 712.4.2.2.

***Section 712.4.1 Renumber and change to read as shown: (FS77-06/07)***

**~~712.4.1~~ 713.4.1 Fire-resistance rated assemblies.** Penetrations of the fire-resistance rated floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall comply with Sections 712.4.1.1 through 714.4.1.4. Penetrations in horizontal smoke barriers shall also comply with 712.5.

***Section 712.4.1.1 Renumber and change to read as shown: (FS10-06/07 Part I)***

**~~712.4.1.1~~ 713.4.1.1 Through penetrations.** Through penetrations of fire-resistance-rated horizontal assemblies shall comply with Section 712.4.1.1.1 or 712.4.1.1.2.

**Exceptions:**

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistance- rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 $mm^2$) in any 100 square feet (9.3 $m^2$) of floor area.

2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items shall not be limited to the penetration of a single concrete floor, provided the area of the opening through each floor does not exceed 144 square inches (92 900 $mm^2$).

3. Penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.

**Section ~~712.4.1.1.1~~ 713.4.1.1.1 Installation** No change to text

***Section 712.4.1.1.2 Renumber and change to read as shown: (FS95-07/08)***

~~712.4.1.1.2~~ 713.4.1.1.2 **Through-penetration firestop system.** Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an F-rating and a T-rating of not less than 1 hour but not less than the required rating of the floor penetrated.

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

***Section 712.4.1.2 Renumber and change to read as shown: (FS89-06/07, FS90-06/07, FS80-07/08)***

~~712.4.1.2~~ 713.4.1.2 **Membrane penetrations.** Penetrations of membranes that are part of a horizontal assembly shall comply with Section 712.4.1.1.1 or 712.4.1.1.2. Where floor/ceiling assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

**Exceptions:**

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

**Section ~~712.4.1.3~~ 713.4.1.3 Ducts and air transfer openings** No change to text
**Section ~~712.4.1.4~~ 713.4.1.4 Dissimilar materials** No change to text

***Section 712.4.2 Renumber and change to read as shown: (FS91-06/07)***

~~712.4.2~~ 713.4.2 **Nonfire-resistance-rated assemblies.** Penetrations of nonfire-resistance rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance rated roof/ceiling assembly shall meet the requirements of Section 707 or shall comply with Section 712.4.2.1 or 712.4.2.2.

***Section 712.4.2.1 Renumber and change to read as shown: (FS97-07/08)***

~~712.4.2.1~~ 713.4.2.1 **Noncombustible penetrating items.** Noncombustible penetrating items that connect not more than three stories are permitted, provided that the annular space is filled to resist the free passage of flame and the products of combustion with an approved noncombustible material or with a fill, void or cavity material that is tested and classified for use in through-penetration firestop systems.

**Section ~~712.4.2.2~~ 713.4.2.2 Penetrating items** No change to text

**Section ~~712.5~~ 713.5 Penetrations in smoke barriers (FS118-07/08)** No change to text ***Section 712.5 further revised by FAH - See SF99-07/08 AMPC***

## Entire section 713 relocated to 714 - Renumber all sections as shown (FS118-07/08)

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

***Section 713.1 Renumber and change to read as shown: (FS10-06/07 Part I; FS102-07/08, FS103-07/08)***

**~~713.1~~ 714.1 General.** Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 713.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 713.4.

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

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 707.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors and ramps within open and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, respectively
6. Mezzanine floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119 or UL 263.

**Section ~~713.2~~ 714.2 Installation** No change to text
**Section ~~713.3~~ 714.3 Fire test criteria** No change to text

***Section 713.4 Renumber and change to read as shown: (FS10-06/07 Part I; FS110-07/08)***

**~~713.4~~ 714.4 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 systems shall be securely installed and tested in accordance with ASTM E 2307 to prevent the passage of flame for the time period at least equal to the fire-resistance rating of the floor assembly and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 704.9.

***Section 714.4.1 Add new section to read as shown: (FS111-07/08) Further revised based on FAH - See FS111-07/08 AMPC***

**714.4.1 Exterior curtain wall & non fire-resistance rated floor assembly intersections.** Voids created at the intersection of exterior curtain wall assemblies and non fire-resistance-rated floor or floor/ceiling assemblies shall be sealed with an approved material or system toresist the interior spread of fire and the free passage of heat and hot gases.
**Section ~~713.5~~ 714.5 Spandrel wall** No change to text

***Section 713.6 Renumber and change to read as shown: (FS112-07/08)***

**~~713.6~~ 714.6 Fire-resistant joint systems in smoke barriers.** Fire-resistant joint systems in smoke barriers, and joints at the intersection of a horizontal smoke barrier and an exterior curtain wall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The air leakage rate of the joint shall not exceed 5 cfm per lineal foot (0.00775 $m^3/s \cdot m$) of joint at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature tests.

## Entire section 714 relocated to 704 - Renumber all sections as shown (FS118-07/08)
**MOVE TO FOLLOW SECTION 703**

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

***Section 714.1 Renumber and change to read as shown: (FS69-06/07, FS98-06/07; FS115-07/08*)**

~~**714.1**~~ **704.1 Requirements**. The fire-resistance ratings of structural members and assemblies shall comply with this section and the requirements for the type of construction as specified in Table 601. The fire-resistance ratings shall not be less than the ratings required for the fire-resistance-rated assemblies supported by the structural members.

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

**Text of 704.1.1 and 704.1.2 for primary and secondary members moved to 202 as a definition (FS 115-07/08 AMPC 1 and 2)**

***Section 714.2 "Protection of structural members" Delete without substitution: (FS98-06/07)***
***Section 714.2.1 "Individual protection" Relocated to 704.3 and 704.4 (FS98-06/07. FS115-07/08)***
***Section 714.2.1.1 "Membrane protection" Relocated to 704.4.1 (FS98-06/07. FS115-07/08)***
***Section 714.2.2 "Column protection above ceilings" Relocated to 704.2 (FS98-06/07. FS115-07/08)***

***Section 704.2 Relocated from Section 714.2.2 and changed to read as shown: (FS98-06/07; FS115-07/08)***

**704.2 Column protection.** Where columns are required to be fire-resistance rated, the entire column, shall be provided individual encasement protection by protecting it on all sides for the full column length, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

***Sections 704.3 and 704.4 Relocated from Section 714.2.1 and changed to read as shown: (FS98-06/07; FS115-07/08)***

**704.3 Protection of the primary structural frame other than columns.** Members of the primary structural frame other than columns that are required to have a fire-resistance rating and support more than two floors or one floor and roof, or support a load-bearing wall or a nonload-bearing wall more than two stories high, shall be provided individual encasement protection by protecting them on all sides for their full length, including connections to other structural members, with materials having the required fire resistance rating.

> **Exception:** Individual encasement protection on all sides shall be permitted on all exposed sides provided the extent of protection is in accordance with the required fire-resistance rating, as determined in Section 703.

**704.4 Protection of secondary members.** Secondary members that are required to have a fire-resistance rating shall be protected by individual encasement protection, by the membrane or ceiling of a horizontal assembly in accordance with in Section 711, or by a combination of both.

***Section 704.4.1 "Membrane protection" Relocated from Section 714.2.1.1 and changed to read as shown: (FS98-06/07, FS115-07/08)***

**704.4.1 Light-frame construction.** King studs and boundary elements that are integral elements in load-bearing walls of light-frame construction shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the load-bearing wall.

***Section ~~714.2.3~~ 704.5 Truss protection.*** No change to text
***Section ~~714.2.4~~ 704.6 Attachment to structural members.*** No change to text

***Section ~~714.2.5~~ 704.7 Reinforcing.*** No change to text
***Section ~~714.3~~ 704.8 Embedments and enclosures*** No change to text
***Section 714.4 "Impact protection" Relocated to 704.9 (FS116-07/08)***

***Section 704.9 Relocated from 714.4 and changed to read as shown: (FS116-07/08)***

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

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

***Section ~~714.5~~ 704.10 Exterior structural members*** No change to text
***Section 714.6 "Bottom flange protection" Relocated to Section 704.11 (FS115-07/08)***

***Section 704.11 "Bottom flange protection" Relocated from Section 714.6 and changed to read as shown: (FS115-07/08)***

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

***Section 714.7 "Seismic isolation systems" Relocated to Section 704.12 (FS10-06/07 Part I)***

***Section 704.12 Relocated from Section 714.7 and changed to read as shown: (FS10-06/07 Part I)***

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

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

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

***Sections 704.13 through 704.13.5 Add new sections to read as shown: (FS100-06/07)***

**704.13 Sprayed fire-resistant materials (SFRM).** Sprayed fire-resistant materials (SFRM) shall comply with Sections 714.8.1 through 714.8.4.

**704.13.1 Fire-resistance rating**. The application of SFRM shall be consistent with the fire resistance rating and the listing, including, but not limited to, minimum thickness and dry density of the applied SFRM, method of application, substrate surface conditions; and the use of bonding adhesives, sealants, reinforcing or other materials.

**704.13.2 Manufacturer's installation instructions.** The application of SFRM shall be in accordance with the manufacturer's installation instructions. The instructions shall include, but are not limited to, substrate temperatures and surface conditions and SFRM handling, storage, mixing, conveyance, method of application, curing and ventilation.

**704.13.3 Substrate condition.** The SFRM shall be applied to a substrate in compliance with Sections 704.13.3.1 through 704.13.3.2.

**704.13.3.1 Surface conditions.** Substrates to receive SFRM shall be free of dirt, oil, grease, release agents, loose scale and any other condition that prevents adhesion. The substrates shall also be free of primers, paints and

encapsulants other than those fire tested and listed by a nationally recognized testing agency. Primed, painted or encapsulated steel shall be allowed, provided that testing has demonstrated that required adhesion is maintained.

**704.13.3.2 Primers, paints and encapsulants.** Where the SFRM is to be applied over primers, paints or encapsulants other than those specified in the listing, the material shall be field tested in accordance with ASTM E 736. Where testing of the SFRM with primers, paints or encapsulants demonstrates that required adhesion is maintained, SFRM shall be permitted to be applied to primed, painted or encapsulated wide flange steel shapes in accordance with the following conditions:

1. The beam flange width does not exceed 12 inches (305 mm); or
2. The column flange width does not exceed 16 inches (400 mm); or
3. The beam or column web depth does not exceed 16 inches (400 mm).
4. The average and minimum bond strength values shall be determined based on a minimum of five bond tests conducted in accordance with ASTM E 736. Bond tests conducted in accordance with ASTM E 736 shall indicate a minimum average bond strength of 80 percent and a minimum individual bond strength of 50 percent, when compared to the bond strength of the SFRM as applied to clean uncoated 1/8-inch-thick (3-mm) steel plate.

**704.13.4 Temperature.** A minimum ambient and substrate temperature of 40ºF (4.44ºC) shall be maintained during and for a minimum of 24 hours after the application of the SFRM, unless the manufacturer's installation instructions allow otherwise.

**704.13.5 Finished condition.** The finished condition of SFRM applied to structural members or assemblies shall not, upon complete drying or curing, exhibit cracks, voids, spalls, delamination or any exposure of the substrate. Surface irregularities of SFRM shall be deemed acceptable.

***Section 715.2 Change to read as shown: (FS10-06/07 Part I, FS101-06/07)***

**715.2 Fire-resistance-rated glazing.** 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 and shall not otherwise be required to comply with this section.

***Section 715.3 Change to read as shown: (FS102-06/07)***
**715.3 Alternative methods for determining fire protection ratings.** 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.

***Section 715.4 Change to read as shown: (FS120-07/08)***

**715.4 Fire door and shutter assemblies.** Approved fire door and fire shutter assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Section 715.4.1, 715.4.2 or 715.4.3 and the fire-protection rating indicated in Table 715.4. Fire door frames with transom lights, sidelights or both shall be permitted in accordance with Section 715.4.5. Fire door assemblies and shutters shall be installed in accordance with the provisions of this section and NFPA 80.

**Exceptions:**

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

***Section 715.4.1 Change to read as shown: (FS105-06/07)***

**715.4.1 Side-hinged or pivoted swinging doors**. 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.

***Section 715.4.2 Change to read as shown: (FS105-06/07)***

**715.4.2 Other types of assemblies**. 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.

***Section 715.4.3 Change to read as shown: (FS121-07/08)***

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

**Exceptions:**

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

***Section 715.4.3.1 Change to read as shown: (FS106-06/07)***

**715.4.3.1 Smoke and draft control.** Fire door assemblies shall also meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 $m^3/s \cdot m^2$) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited. Installation of smoke doors shall be in accordance with NFPA 105.

***Section 715.4.3.2 Change to read as shown: (FS102-06/07)***

**715.4.3.2 Glazing in door assemblies.** In a 20-minute fire door assembly, the glazing material in the door itself 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 or UL 9, including the hose stream test, in accordance with Section 715.5.

***Section 715.4.4 Change to read as shown: (FS108-06/07)***

**715.4.4 Doors in exit enclosures and exit passageways.** 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.

***Section 715.4.4.1 Change to read as shown: (FS105-06/07, FS108-06/07)***

**715.4.4.1 Glazing in doors.** Fire-protection-rated glazing in excess of 100 square inches (0.065 $m^2$) 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 715.4.4.

**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.

***Section 715.4.5 Add new text to read as shown: (FS120-07/08)***

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

~~715.4.5~~ **715.4.6 Labeled protective assemblies** No change to text

***Section 715.4.5.1 Renumbered and changed to read as shown: (FS110-06/07; FS120-07/08)***

~~715.4.5.1~~ **715.4.6.1 Fire door labeling requirements.** Fire doors shall be labeled showing the name of the manufacturer or other identification readily traceable back to the manufacturer, 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 715.4.4, the maximum transmitted temperature end point. Smoke and draft control doors complying with UL 1784 shall be labeled as such and shall also comply with Section 715.4.5.3. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.

~~715.4.5.2~~ **715.4.6.2 Oversized doors** No change to text ***(FS120-07/08)***
~~715.4.5.3~~ **715.4.6.3 Smoke and draft control door labeling requirements** No change to text ***(FS120-07/08)***
~~715.4.5.4~~ **715.4.6.4 Fire door frame labeling requirements** No change to text ***(FS120-07/08)***
~~715.4.6~~ **715.4.7 Glazing material** No change to text ***(FS120-07/08)***

***Section 715.4.6.1 Renumbered and changed to read as shown: (FS112-06/07, FS113-06/07; FS120-07/08)***

~~715.4.6.1~~ **715.4.7.1 Size limitations.** Fire protection-rated glazing used in fire doors shall comply with the size limitations of NFPA 80.

**Exceptions:**

1. Fire protection-rated glazing in fire doors located in fire walls shall be prohibited except where serving in a fire door in a horizontal exit, a self-closing swinging door 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).
2. Fire protection-rated glazing shall not be installed in fire doors having a 11/2-hour fire protection rating intended for installation in fire barriers, unless the glazing is not more than 100 square inches (0.065 $m^2$) in area.

~~715.4.6.2~~ **715.4.7.2 Exit and elevator protectives** No change to text ***(FS120-07/08)***
~~715.4.6.3~~ **715.4.7.3 Labeling** No change to text ***(FS120-07/08)***

***Section 715.4.6.3.1 Renumber and Change to read as shown: (FS116-06/07; FS120-07/08)***

~~715.4.6.3.1~~ **715.4.7.3.1 Identification.** For fire protection-rated glazing, the label 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 protection requirements of NFPA 252. "H" shall indicate that the glazing meets the hose stream requirements of NFPA 252. "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 715.4.4.1. "NT" shall indicate that the glazing does not meet the temperature requirements of Section 715.4.4.1. The placeholder "XXX" shall specify the fire-protection-rating period, in minutes.

***Section 715.4.6.4 Renumber and Change to read as shown: (FS118-06/07; FS120-07/08)***

~~715.4.6.4~~ 715.4.7.4 **Safety glazing.** Fire protection-rated glazing installed in fire doors in areas subject to human impact in hazardous locations shall comply with Chapter 24.

~~715.4.7~~ 715.4.8 **Door closing** No change to text ***(FS120-07/08)***
~~715.4.7.1~~ 715.4.8.1 **Latch required** No change to text ***(FS120-07/08)***
~~715.4.7.2~~ 715.4.8.2 **Automatic-closing fire door assemblies** No change to text ***(FS120-07/08)***
~~715.4.7.3~~ 715.4.8.3 **Smoke-activated doors** No change to text ***(FS120-07/08)***
~~715.4.7.4~~ 715.4.8.4 **Doors in pedestrian ways** No change to text ***(FS120-07/08)***
~~715.4.8~~ 715.4.9 **Swinging fire shutters** No change to text ***(FS120-07/08)***
~~715.4.9~~ 715.4.10 **Rolling fire shutters** No change to text ***(FS120-07/08)***

***Section 715.5 Change to read as shown: (FS102-06/07)***

**715.5 Fire protection-rated glazing.** Glazing in fire window assemblies shall be fire protection rated in accordance with this section and Table 715.5. Glazing in fire door assemblies shall comply with Section 715.4.6. Fire protection-rated glazing shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 or UL 9. Fire protection-rated glazing shall also comply with NFPA 80. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 704.3, 704.8, 704.9 or 704.10 shall have a fire protection rating of not less than 3/4 hour.

**Exceptions:**

1. Wired glass in accordance with Section 715.5.3.
2. Fire protection-rated glazing in 0.5-hour fire-resistance-rated partitions is permitted to have an 0.33-hour fire-protection rating.

***Table 715.5 Change table to read as shown: (FS124-06/07)***

**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<br>1 | NP [a]<br>3/4 |
| | Smoke barriers | 1 | 3/4 |
| | Fire partitions | 1<br>½ | 3/4<br>1/3 |
| Exterior walls | | > 1<br>1 | 1 ½<br>3/4 |
| Party wall | | All | NP |

NP = Not Permitted.
a. Not permitted except as specified in Section 715.2.

***Section 715.5.1 Change to read as shown: (FS102-06/07)***

**715.5.1 Testing under positive pressure.** NFPA 257 or UL 9 shall evaluate fire protection-rated glazing 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.

***Section 715.5.2 Change to read as shown: (FS102-06/07)***

**715.5.2 Nonsymmetrical glazing systems.** Nonsymmetrical fire protection-rated glazing systems in fire partitions, fire barriers or in exterior walls with a fire separation distance of 5 feet (1524 mm) or less pursuant to 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 or UL 9.

***Section 715.5.3 Add new section to read as shown: (FS118-06/07)***

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

~~**715.5.3**~~ **715.5.4 Wired glass** No change to text ***(FS118-06/07)***
**Table ~~715.5.3~~ 715.5.4 LIMITING SIZES OF WIRED GLASS PANELS** No change to text ***(FS118-06/07)***
~~**715.5.4**~~ **715.5.5 Non-wired glass** No change to text ***(FS118-06/07)***
~~**715.5.5**~~ **715.5.6 Installation** No change to text ***(FS118-06/07)***
~~**715.5.6**~~ **715.5.7 Window mullions** No change to text ***(FS118-06/07)***
~~**715.5.7**~~ **715.5.8 Interior fire window assemblies** No change to text ***(FS118-06/07)***

***Section 715.5.7.1 Renumber and change to read as shown: ( FS136-07/08)***

~~**715.5.7.1**~~ **715.5.8.1 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.

***Section 715.5.7.2 Renumber and change to read as shown: ( FS136-07/08)***

~~**715.5.7.2**~~ **715.5.8.3 Area limitations.** The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

~~**715.5.8**~~ **715.5.9 Labeling requirements** No change to text ***(FS118-06/07)***

***Section 715.5.8.1 Renumber and change to read as shown: (FS102-06/07, FS129-06/07)***

~~**715.5.8.1**~~ **715.5.9.1 Identification.** For fire protection-rated glazing, the label shall bear the following two-part identification: “OH – XXX.” “OH” indicates that the glazing meets both the fire protection and the hose-stream requirements of NFPA 257 or UL 9 and is permitted to be used in openings. “XXX” represents the fire-protection rating period, in minutes, that was tested.

***Section 716.1.1 Change to read as shown: (FS46-06/07)***

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

***Section 716.1.1.1 Add new section to read as shown: (FS46-06/07)***

**716.1.1.1 Ducts that penetrate nonfire-resistance-rated assemblies.** The space around a duct penetrating a nonfire-resistance-rated floor assembly shall comply with Section 716.6.3.

***Section 716.2.1 Change to read as shown: (FS137-07/08)***

**716.2.1 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. 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.

***Revisions to Section 716.3 from FAH - See FS139-07/08 AMPC***

***Revisions to Section 716.3.1.1 from FAH - See FS139-07/08 AMPC***

***Revisions to Section 716.3.1.2 from FAH - See FS139-07/08 AMPC***

***Revisions to Section 716.3.2 from FAH - See FS139-07/08 AMPC***

***Section 716.3.2.1 Change to read as shown: (FS130-06/07)*** **(FS139-07/08)** ***Further revisions to Section 716.3.2.1 from FAH - See FS139-07/08 AMPC***

**716.3.2.1 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 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 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 damper is installed within an air transfer 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 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, dampers shall be permitted to be controlled by the smoke detection system.

***Add new Sections 716.3.2.2 and 716.3.2.3 from FAH - See FS139-07/08 AMPC***

***Add new Sections 716.3..3.3 and 716.3.3.4 from FAH - See FS139-07/08 AMPC***

***Section 716.5 Change to read as shown: (FS140-06/07; FS141-07/08***

**716.5 Where required.** Fire dampers, smoke dampers and combination fire/smoke dampers shall be provided at the locations prescribed in Sections 716.5.1 through 716.5.7 and Section 716.6. 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.

***Section 716.5.1.1 Add new section to read as shown: (E146-06/07)***

**716.5.1.1 Horizontal Exits.** 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 fire wall that serves as a horizontal exit.

***Section 716.5.2 Change to read as shown: (FS10-06/07 Part I)***

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

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

1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance rated assembly.
2. Ducts are used as part of an approved smoke control system in accordance with Section 909 and where the use of a fire damper would interfere with the operation of a smoke control system.
3. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group 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.

***Section 716.5.2.1 Add new section to read as shown: (E146-06/07)***

**716.5.2.1 Horizontal Exits.** 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 fire barrier that serves as a horizontal exit.

***Section 716.5.3 Change to read as shown: (FS10-06/07 Part I, FS135-06/07,* M16-07/08*)***

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

**Exceptions:**

1. 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 minimum wall thickness of 0187-inches (0.4712 mm) (No. 26 Gage)
   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*.

***Section 716.5.4 Change to read as shown: (FS43-06/07; FS145-07/08;* M16-07/08*)***

**716.5.4 Fire partitions**. Ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listing.

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

1. Corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 712.
2. Tenant partitions in covered mall buildings where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of approved materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
   3.1. The duct shall not exceed 100 square inches (0.06 $m^2$).
   3.2. The duct shall be constructed of steel a minimum of 0.0217- inch (0.55 mm) in thickness.

3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
3.4. The duct shall be installed above a ceiling.
3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 11/2-inch by 11/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.

***Section 716.5.6 Add new section to read as shown: (FS139-06/07)***

**716.5.6 Exterior walls.** Ducts and air transfer openings in fire-resistance rated exterior walls required to have protected openings in accordance with Section 704.14 shall be protected with listed fire dampers installed in accordance with their listing.

***Section 716.5.7 Add new section to read as shown: (FS140-06/07)***

**716.5.7 Smoke partitions.** A listed smoke damper designed to resist the passage of smoke shall be provided at each point that an air transfer opening penetrates a smoke partition. Smoke dampers and smoke damper actuation methods shall comply with Section 716.3.2.1.

**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 alternate protection shall be utilized.

***Section 716.6.1 Change to read as shown: (FS10-06/07 Part I;* M16-07/08*)***

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

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

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0187-inches (0.4712 mm) (No. 26 Gage).
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.

***Section 716.6.2.1 Change to read as shown: (FS10-06/07 Part I, FS143-06/07) Further revised from FAH - See FS139-07/08 AMPC***

**716.6.2.1 Ceiling radiation dampers.** Ceiling radiation dampers shall be tested either in accordance with UL 555C or as part of a fire-resistance rated floor-ceiling or roof/ceiling assembly in accordance with ASTM E 119 or UL 263. Ceiling radiation damper shall be installed in accordance with the details listed in the fire-resistance rated assembly and the manufacturer's installation instructions and the listing. Ceiling radiation dampers are not required where either of the following applies:

1. Tests in accordance with ASTM E 119 or UL 263 have shown that ceiling radiation dampers are not necessary in order to maintain the fire-resistance rating of the assembly.
2. Where exhaust duct penetrations are protected in accordance with Section 712.4.1.2, are located within the cavity of a wall and do not pass through another dwelling unit or tenant space.

***Section 717.2.1 Change to read as shown: (FS145-06/07, FS146-06/07)***

**717.2.1 Fireblocking materials.** Fireblocking shall consist of the following materials:

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 0.719-inch (18.3 mm) wood structural panels with joints backed by 0.719-inch (18.3 mm) wood structural panels.
4. One thickness of 0.75-inch (19.1 mm) particleboard with joints backed by 0.75-inch (19 mm) particleboard.
5. One half-inch (12.7 mm) Gypsum board.
6. One fourth-inch (6.4 mm) Cement-based millboard.
7. Batts or blankets of mineral wool, mineral fiber or other approved materials installed in such a manner as to be securely retained in place.

***Section 717.2.1.1 Add new section to read as shown: (FS145-06/07, FS146-06/07)***

**717.2.1.1 Batts or blankets of mineral wool or mineral fiber.** Batts or blankets of mineral wool or mineral fiber or other approved nonrigid materials shall be permitted for compliance with the 10-foot (3048 mm) horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs.

***Section 717.2.1.2 Add new section to read as shown: (FS146-06/07)***

**717.2.1.2 Unfaced fiberglass.** Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross section of the wall cavity to a minimum height of 16 inches (406 mm) measured vertically. When piping, conduit or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction.

***Section 717.2.1.3 Add new section to read as shown: (FS145-06/07, FS146-06/07)***

**717.2.1.3 Loose-fill insulation material.** Loose-fill insulation material, insulating foam sealants and caulk materials shall not be used as a fireblock unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.

***Section 717.2.1.4 Add new section to read as shown: (FS146-06/07)***

**717.2.1.4 Fireblocking integrity.** The integrity of fireblocks shall be maintained.

~~**717.2.1.1**~~ **717.2.1.5 Double stud walls.** No change to text ***(FS146-06/07)***

***Section 717.2.5 Change to read as shown: (FS147-07/08)***

**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.

***Section 717.2.5.1 Add new section as shown: (FS147-07/08)***

**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.

***Section 717.4.2 Change to read as shown: (G6-06/07 Part I)***

**717.4.2 Groups R-1 and R-2.** Draftstopping shall be provided in attics, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more dwelling units and in all Group R-1 buildings. Draftstopping shall be

installed above, and in line with, sleeping unit and dwelling unit separation walls that do not extend to the underside of the roof sheathing above.

**Exceptions:**

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

***Section 719.1 Change to read as shown: (FS11-06/07 Part I) Further revised by FAH - See FS149-07/08 AMPC***

**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*.

***Section 719.2.1 revised by FAH - See FS149-07/08 AMPC***

***Section 719.4 Change to read as shown: (FS11-06/07 Part I, FS148-06/07)***

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

**Exception:** Cellulose loose-fill insulation shall not be required to be tested in accordance with CAN/ULC S102.2, provided such insulation complies with the requirements of Section 719.2 or 719.3, as applicable, and Section 719.6.

***Section 720.1 Change to read as shown: (FS9-06/07)***

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

***Table 720.1(1) Change table footnotes to read as shown: (FS10-06/07 Part I)***

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

(No change to table text)

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

a. Reentrant parts of protected members to be filled solidly.
b. Two layers of equal thickness with a 3/4-inch airspace between.
c. For all of the construction with gypsum wallboard described in Table 720.1(1), gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided attachment is identical to that specified for the wallboard and the joints on the face layer are reinforced, and the entire surface is covered with a minimum of 1/16-inch gypsum veneer plaster.
d. An approved adhesive qualified under ASTM E 119 or UL 263.
e. Where lightweight or sand-lightweight concrete having an oven-dry weight of 110 pounds per cubic foot or less is used, the tabulated minimum cover shall be permitted to be reduced 25 percent, except that in no case shall the cover be less than 3/4 inch in slabs or 11/2 inches in beams or girders.
f. For solid slabs of siliceous aggregate concrete, increase tendon cover 20 percent.
g. Adequate provisions against spalling shall be provided by U-shaped or hooped stirrups spaced not to exceed the depth of the member with a clear cover of 1 inch.
h. Prestressed slabs shall have a thickness not less than that required in Table 720.1(3) for the respective fire resistance time period.
i. Fire coverage and end anchorages shall be as follows: Cover to the prestressing steel at the anchor shall be 1/2 inch greater than that required away from the anchor. Minimum cover to steel-bearing plate shall be 1 inch in beams and 3/4 inch in slabs.
j. For beam widths between 8 inches and 12 inches, cover thickness shall be permitted to be determined by interpolation.
k. Interior spans of continuous slabs, beams and girders shall be permitted to be considered restrained.
l. For use with concrete slabs having a comparable fire endurance where members are framed into the structure in such a manner as to provide equivalent performance to that of monolithic concrete construction.
m. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in GA 600 shall be accepted as if herein listed.
n. No additional insulating material is required on the exposed outside face of the column flange to achieve a 1-hour fire-resistance rating.

l. For use with concrete slabs having a comparable fire endurance where members are framed into the structure in such a manner as to provide equivalent performance to that of monolithic concrete construction.
m. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in GA 600 shall be accepted as if herein listed.
n. No additional insulating material is required on the exposed outside face of the column flange to achieve a 1-hour fire-resistance rating.

***Table 720.1(2) Change table to read as shown: (FS149-06/07, FS150-06/07, FS152-06-07)***

**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 | 15-1.12q | 2"× 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $^5/_8$"Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2^1/_4$" Type S drywall screws, spaced 12" on center. Cavity to be filled with 5-½" mineral wool insulation. | — | — | — | 6 3/4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15. Exterior or interior walls | 15-1.13q | 2” x 6” wood studs at 16” with double top plates, single bottom plate; interior and exterior sides covered with $^{5}/_{8}$” Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with $2^{1}/_{4}$” Type S drywall screws, spaced 12” on center. R-19 mineral fiber insulation installed in stud cavity. | | | | 6 3/4 |
| 16. Exterior walls rated for fire resistance from the inside only in accordance with Section 704-5. | 16-1.3 | 2”$\times$ 6” wood studs at 16” centers with double top plates, single bottom plates; interior side covered with $^{5}/_{8}$” Type X gypsum wallboard, 4’ wide, applied vertically with all joints over framing or blocking and fastened with $2^{1}/_{4}$” Type S drywall screws spaced 7” on center. Joints to be covered with tape and joint compound. Exterior covered with $^{3}/_{8}$”wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12” on center in the field and 6” on center on panel edges. R-19 mineral fiber insulation installed in stud cavity. Rating established from the gypsum-covered side only. | — | — | — | 6 ½ |

(Portions of table not shown remain unchanged))

***Table 720.1(2) (continued) Add new table sections to read as shown (FS151-06/07)***

**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 | 15-2.1[d] | 3 $^{5}/_{8}$” No. 16 gage steel studs at 24” on center or 2” x 4” wood studs at 24” on center. Metal lath attached to the exterior side of studs with minimum 1” long No. 6 drywall screws at 6” on center and covered with minimum ¾” thick portland cement plaster. Thin veneer brick units of clay or shale complying with ASTM C 1088, Grade TBS or better, installed in running bond in accordance with Section 1405.9. Combined total thickness of the portland cement plaster, mortar and thin veneer brick units shall be not less than 1 ¾”. Interior side covered with one layer of $^{5}/_{8}$” thick Type X gypsum wallboard attached to studs with 1” long No. 6 drywall screws at 12” on center. | | | | 6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 15-2.2[d] | 3 5/8" No. 16 gage steel studs at 24" on center or 2" x 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum ¾" thick portland cement plaster. Thin veneer brick units of clay or shale complying with ASTM C 1088, Grade TBS or better, installed in running bond in accordance with Section 1405.9. Combined total thickness of the portland cement plaster, mortar and thin veneer brick units shall be not less than 2". Interior side covered with two layers of 5/8" thick Type X gypsum wallboard. Bottom layer attached to studs with 1" long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 5/8" long No. 6 drywall screws at 12" on center. | | | 6 1/8 | |
| | 15-2.3[d] | 3 5/8" No. 16 gage steel studs at 16" on center or 2" x 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than 2 5/8" thick complying with ASTM C 216 installed in accordance with Section 1405.5 with a minimum 1" air space. Interior side covered with one layer of 5/8" thick Type X gypsum wallboard attached to studs with 1" long No. 6 drywall screws at 12" on center. | | | | 7 1/8 |
| | 15-2.4[d] | 3 5/8" No. 16 gage steel studs at 16" on center or 2" x 4" wood studs at 16" on center. Where metal lath is used attach to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than 2 5/8" thick complying with ASTM C 216 installed in accordance with Section 1405.5 with a minimum 1" air space. Interior side covered with two layers of 5/8" thick Type X gypsum wallboard. Bottom layer attached to studs with 1" long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 5/8" long No. 6 drywall screws at 12" on center. | | | 8 1/2 | |

(Portions of table not shown remain unchanged)

***Table 720.1(3) Change table to read as shown: (FS153-07/08)***

**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 | 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" | | 5/8 |

| | | | | |
|---|---|---|---|---|
| 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. | | Type S drywall screws spaced 7″ on center. Wallboard joints to be taped and covered with joint compound | | |
| 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 wool insulation (2.5 pcf - nominal) resting on hat-shaped furring channels. | 25-1.1 | Minimum 0.026″ thick hat-shaped channel 16″ o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8″ Type S drywall screws. 5/8″ Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1-1/8″ Type S drywall screws spaced 12″ o.c. in the field and 8″ o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound. | | 5/8 |
| 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 wool insulation (2.5 pcf - nominal) resting on resilient channels. | 26-1.1 | Minimum 0.019″ thick resilient channel 16″ o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by 1-5/8″ Type S drywall screws. 5/8″ Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1″ Type S drywall screws spaced 12″ o.c. in the field and 8″ o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound. | | 5/8 |
| 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″ 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. | | 1 |
| 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 | | 1 |

| | | | | |
|---|---|---|---|---|
| | | 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. | | |
| 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. 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 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 | |
| 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 attached with 1-5/8″ Type S-12 screws spaced 12″ o.c. | 30-1.1 | Base layer 5/8″ Type X gypsum board applied perpendicular to bottom of framing members with 1-1/8″ Type S-12 screws spaced 12″ o.c. Second layer 5/8″ Type X gypsum board attached perpendicular to framing members with 1-5/8″ Type S-12 screws spaced 12″ o.c. Second layer joints offset 24″ from base layer. Third layer 5/8″ Type X gypsum board attached perpendicular to framing members with 2-3/8″ Type S-12 screws spaced 12″ o.c. Third layer joints offset 12″ from second layer joints. Hat-shaped 7/8-inch rigid furring channels applied at right angles to framing members over third layer with two 2-3/8″ Type S-12 screws at each framing member. Face layer 5/8″ Type X gypsum board applied at right angles to furring channels with 1-1/8″ Type S screws spaced 12″ o.c. | 3-3/8 | |

(Portions of table not shown remain unchanged)

***Section 721.1 Change to read as shown: (FS153-06/07)***

**721.1 General.** The provisions of this section contain procedures by which the fire resistance of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated fire resistance of concrete, concrete masonry, and clay masonry assemblies shall be permitted in accordance with ACI 216.1/TMS 0216. The calculated fire resistance of steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29. The calculated fire resistance of exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AF&PA *National Design Specification for Wood Construction (NDS)*.

***Table 721.2.1.4(1) Change to read as shown: (FS156-07/08; FS157-07/08)***

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

| 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 carbonate; solid clay brick | Concrete: sand-lightweight Concrete Masonry: 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 pumice< 20% sand | Concrete Masonry: concrete masonry units of expanded slag, expanded clay, or pumice |
| Portland cement-sand plaster | 1.00 | 0.75[a] | 0.75[a] | 0.50[a] |
| Gypsum-sand plaster | 1.25 | 1.00 | 1.00 | 1.00 |
| Gypsum-vermiculite or perlite plaster | 1.75 | 1.50 | 1.25 | 1.25 |
| Gypsum wallboard | 3.00 | 2.25 | 2.25 | 2.25 |

For SI: 1 inch = 25.4 mm

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

***Section 721.2.1.4.3 Change to read as shown: (FS155-07/08)***

**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 a fire separation distance greater than 5 feet (1524 mm) the fire shall be assumed to occur on the interior side only.

***Section 721.2.4.1 Change to read as shown: (FS154-07/08)***

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

***Section 721.2.4.1.1 Add new text as shown: )FS154-07/08(***

**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.

***Section 721.2.4.1.2 Add new text as shown: )FS154-07/08(***

**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(.

***Section 721.2.4.2 Change to read as shown: )FS154-07/08(***

**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.

***Section 721.2.4.3 Add new text as shown: (FS154-07/08)***

**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.

~~**721.2.4.3**~~ **721.2.4.4 Columns built into walls.** No change to text ***(FS154-07/08)***
~~**721.2.4.4**~~ **721.2.4.5 Precast cover units for steel columns** No change to text ***(FS154-07/08)***

***Section 721.3.1.1 Change to read as shown: (FS158-07/08)***

**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)**

***Table 721.3.2 Change to read as shown: (FS158-07/08)***

(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, 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.

***Section 721.3.2.3 Change to read as shown: (FS155-07/08)***

**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 a fire separation distance greater than 5 feet (1524 mm) the fire shall be

assumed to occur on the interior side only.

***Section 721.4.1.1.1 Change to read as shown: (FS154-06/07)***

**721.4.1.1.1 Hollow clay units.** The equivalent thickness, *Te*, shall be the value obtained for hollow clay units as determined in accordance with Equation 7-8. The net volume, *Vn*, of the units shall be determined using the gross volume and percentage of void area determined in accordance with ASTM C 67.

***Figure 721.5.1 (5) Change figure heading to read as shown: (FS156-06/07)***

**FIGURE 721.5.1(5)**
**WIDE FLANGE STRUCTURAL STEEL COLUMNS WITH SPRAYED FIRE-RESISTANT MATERIALS**

(No change to figure)

***Section 721.4.1.4 Change to read as shown: (FS155-07/08)***

**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 a fire separation distance greater than 5 feet (1524 mm) the fire shall be assumed to occur on the interior side only.

***Section 721.5.1.3 Change to read as shown: (FS156-06/07)***

**721.5.1.3 Sprayed fire-resistant materials**. The fire resistance of wide-flange structural steel columns protected with sprayed fire-resistant materials, as illustrated in Figure 721.5.1(5), shall be permitted to be determined from the following expression:

$$R = [C_1 (W/D) + C_2 ] h \qquad \textbf{(Equation 7-13)}$$

where:
$R$ = Fire resistance (minutes).
$h$ = Thickness of sprayed fire-resistant material (inches).
$D$ = Heated perimeter of the structural steel column (inches).
$C_1$ and $C_2$ = Material-dependent constants.
$W$ = Weight of structural steel columns (pounds per linear foot).

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

***Section 721.5.1.3.2 Change to read as shown: (FS156-06/07)***

**721.5.1.3.2 Identification**. Sprayed fire-resistant materials shall be identified by density and thickness required for a given fire-resistance rating.

***Section 721.5.2.2 Change to read as shown: (FS156-06/07)***

**721.5.2.2 Sprayed fire-resistant materials**. The provisions in this section apply to structural steel beams and girders protected with sprayed fire-resistant materials. Larger or smaller beam and girder shapes shall be permitted to be substituted for beams specified in approved unrestrained or restrained fire-resistance rated assemblies, provided that the thickness of the fire-resistant material is adjusted in accordance with the following expression:

$$h_2 = h_1 [(W_1/D_1) + 0.60 ] / [W_2/D_2) + 0.60 ] \qquad \textbf{(Equation 7-17)}$$

where:
*h* = Thickness of sprayed fire-resistant material in inches.
*W* = Weight of the structural steel beam or girder in pounds per linear foot.
D = Heated perimeter of the structural steel beam in inches.

Subscript 1 refers to the beam and fire-resistant material thickness in the approved assembly.
Subscript 2 refers to the substitute beam or girder and the required thickness of fire-resistant material.

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

***Section 721.5.2.3 Change to read as shown: (FS156-06/07, FS20-07/08)***

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

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

***Section 721.6.1.1 Change to read as shown: (FS153-06/07)***

**721.6.1.1 Maximum fire-resistance rating.** Fire resistance ratings calculated for assemblies using the methods in Section 721.6 shall be limited to a maximum of 1 hour.

***Section 721.6.2.3 Change to read as shown: (FS155-07/08)***

**721.6.2.3 Exterior walls.** For an exterior wall with a fire separation distance greater than 5 feet (1524 mm) 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 with a fire separation distance greater than 5 feet (1524 mm) may consist of sheathing, sheathing paper, and siding as described in Table 721.6.2(3).

***Table 721.6.2(3) Change to read as shown: (FS159-07/08)***

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

| SHEATHING | PAPER | EXTERIOR FINISH |
|---|---|---|
| 5/8-inch T & G lumber<br>5/16-inch exterior glue wood structural panel<br>½-inch gypsum wallboard<br>5/8-inch gypsum wallboard<br>½inch fiberboard | Sheathing paper | Lumber siding<br>Wood shingles and shakes<br>¼-inch wood structural panels—exterior type<br>¼-inch hardboard<br>Metal siding<br>Stucco on metal lath<br>Masonry veneer<br>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.

**As noted on page 1, the following are code changes for which the final action taken was approval by one or more public comments. The resulting text of these code changes needs to be incorporated in the sections noted on pages 40 – 43 where the instruction line reads "See xx-07/08 AMPC".**

# FS11-07/08 – AMPC2

*Proposed Change as Submitted:*
**Delete without substitution as follows:**

~~**703.6 (Supp) Marking and identification.** Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:~~

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

**Committee Action:** **Disapproved**

*Public Comment 2:*
**Replace the proposal with the following:**

**703.6 (Supp) Marking and Identification**. Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:

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

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# FS26-07/08 - AMPC

*Proposed Change as Submitted:*
**Revise as follows:**

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

(Portions of table not shown remain unchanged)

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

**Committee Action:** **Approved as Submitted**

*Public Comment:*
**Modify proposal as follows:**

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

(Portions of table not shown remain unchanged)

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

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# FS53-07/08 - AMPC

*Proposed Change as Submitted:*
**Revise as follows:**

**707.14.1 (Supp) Elevator lobby.** An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each

floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

**Exceptions:**

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

**Committee Action:** **Disapproved**

*Public Comment:*
**Modify proposal as follows:**

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

**Exceptions:**

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

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# FS67-07/08 - AMPC

*Proposed Change as Submitted:*
**1. Revise as follows:**

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

**Exceptions:**

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section ~~707.14.2~~ 909.21.

**2. Delete without substitution:**

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

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

**3. Add new text as follows:**

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

**Committee Action:** **Disapproved**

*Public Comment:*
**Replace proposal as follows:**

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

**707.14.2.1 Pressurization requirements.** Elevator hoistways shall be pressurized to maintain a minimum positive pressure of ~~0.04~~ 0.10 inches of water (~~0.96~~ 25 Pa~~)~~ and a maximum positive pressure of ~~0.06~~ 0.25 inches of water (~~14.94~~ 67 Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all elevator cars at the floor of recall and all hoistway doors on the floor of recall open and all other hoistway doors closed. The opening and closing of hoistway doors at each level must be demonstrated during this test. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet.

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

(Renumber subsequent sections.)

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

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

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

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

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# FS81-07/08, Part I - AMPC

*Proposed Change as Submitted:*
**PART I – IBC FIRE SAFETY**

**Add new text as follows:**

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

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

*Public Comment:*
**Modify proposal as follows:**

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

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# FS81-07/08, Part II - AS

*Proposed Change as Submitted:*
**PART II – IBC GENERAL**

**Add new text as follows:**

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

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# FS99-07/08 - AMPC

*Proposed Change as Submitted:*
**Revise as follows:**

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

**Committee Action:** **Disapproved**

*Public Comment:*
**Modify proposal as follows:**

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

1. 5.0 cfm per square foot (0.025$m^3$ / s-$m^2$ ) of penetration opening for each through-penetration firestop system, or,
2. A total cumulative leakage of 50 cfm for any 100 square feet of wall area, or floor area.

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# FS111-07/08 - AMPC

*Proposed Change as Submitted:*
**Add new text as follows:**

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

**Committee Action:** **Approved as Modified**

**Modify proposal as follows:**

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

*Public Comment:*
**Further modify proposal as follows:**

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

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# FS139-07/08 – AMPC

*Proposed Change as Submitted:*
**Revise as follows:**

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

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

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

**716.3.2.1 (IMC [B] 607.3.2.1) Fire damper ratings.** Fire dampers shall have the minimum fire protection rating specified in Table ~~716.3.1~~ 716.3.2.1 for the type of penetration.

**TABLE ~~716.3.1~~ 716.3.2.1 (IMC [B] Table ~~607.3.1~~ 607.3.2.1)**
**FIRE DAMPER RATING**

(Portions of table not shown do not change)

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

~~716.3.1.1~~ **716.3.3 (IMC [B] ~~607.3.1.1~~ 607.3.3) ~~Fire~~ Damper ~~actuating device~~ actuation.** Damper actuation shall be in accordance with 716.3.3.1 through 716.3.3.3 as applicable.

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

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

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

~~716.3.2.1~~ **716.3.3.2 (IMC [B] ~~607.3.2.1~~ 607.3.3.2) Smoke damper actuation methods.** The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

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

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

**Committee Action:** **Disapproved**

*Public Comment:*
**Modify proposal as follows:**

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

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

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

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

**716.3.3.*2* (IMC [B] 607.3.3.2) Smoke damper actuation ~~methods~~.** The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.10 and one of the following methods, as applicable:

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

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

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

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

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

1. Tests in accordance with ASTME119 have shown that ceiling radiation dampers are not necessary in order to maintain the fire-resistance rating of the assembly.
2. Where exhaust duct penetrations are protected in accordance with Section 712.4.1.2, are located within the cavity of a wall and do not pass through another dwelling unit or tenant space.

(Portions of proposal not shown remain unchanged)

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# FS149-07/08 - AMPC

*Proposed Change as Submitted:*

**1. Add new definition as follows:**

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

**2. Revise as follows:**

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

**Exceptions:**

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

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

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

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

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

**3. Add new text as follows**

**SECTION 2604**
**REFLECTIVE PLASTIC CORE FOIL INSULATION**

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

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

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

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

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

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

**2604.5 Thermal barrier.** Reflective plastic core foil insulation shall be separated from the interior of a building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 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

**Committee Action:** **Disapproved**

*Public Comment:*

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

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

**Exceptions:**

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*.
4. All layers of single and multilayer reflective plastic core insulation shall comply with Section 2612.

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

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

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

**Exception:** All layers of single and multilayer reflective plastic core insulation shall comply with Section 2612.

**SECTION 2612**
**REFLECTIVE PLASTIC CORE INSULATION**

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

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

**2612.3 Surface-burning characteristics.** Reflective plastic core insulation shall have a flame-spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E 84 or UL 723. The reflective plastic core insulation shall be tested at the maximum thickness intended for use and shall be tested using one of the mounting methods in Section 2612.3.1 or 2612.3.2.

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

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

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