

CTC Meeting #19 Possible New Area of Study – Elevator Lobbies

At the 2009 Code Development Hearings, a motion was passed by the IBC – Fire Safety committee that the issue of elevator lobbies, based on the significant number of code changes that have been submitted over the past cycles, be investigated in a forum outside of the code development process. The intent being that such a forum would achieve the following:

- Maintaining our involvement for governmental members as well as industry representatives to thoroughly review the issues.
- Review the need for elevator lobbies; with emphasis on building use, building and hoistway height, active and passive fire protection features associated with the aforementioned.
- Review the differences and specific needs when dealing with elevator lobbies of traditional-use elevators, fire service elevators, and occupant evacuation elevators.
- Review the appropriate use of alternatives including pressurization of hoistways, additional doors, roll-down style barriers, and gasketing systems.
- Review with members of elevator industry to scope the requirements of applicable elevator reference standards as it deals with elevator lobby design, use and construction.
- Provide code change proposals or modify existing cycle proposals on consensus items found by the committee.

The following is a compilation of lobby related code changes that have been considered over the past 3 cycles.

09/10 Cycle: 16 code changes (1 - 14)

07/08 Cycle: 15 code changes (15 - 27)

06/07 Cycle: 4 code changes (28 – 32)

There have been changes submitted in previous cycles as well.

09/10 Cycle: FS40 through FS55

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FS40–09/10

708.14.1

Proponent: Rick Thornberry, PE, The Code Consortium, Inc., representing self

Revise as follows:

708.14.1 Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than ~~three~~ two stories. The lobby enclosure shall separate the elevator shaft enclosure doors from each floor by fire partitions. In addition to the requirements in Section 709 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:

(Exceptions to remain unchanged)

Reason: This proposed code change is a follow up to Code Change FS46-07/08 which was submitted by Cal Chiefs. During the public hearings in Palm Springs, the Cal Chiefs representative at the hearings requested that the Fire Safety Committee disapprove the code change since it needed further development. No other testimony was offered on that code change proposal. It is not clear as to why this position was taken, especially since a Public Comment was never developed to follow up. At any rate, the following text in the remainder of this supporting statement is taken from that original code change submittal.

Currently, this Section triggers the requirement for enclosed elevator lobbies when the elevator shaft enclosure connects more than three stories. The purpose of this code change proposal is to reduce that threshold to where the elevator shaft enclosure connects more than two stories.

This is generally consistent with Section 708 Shaft Enclosures which requires shaft enclosures for openings that pass through floor/ceiling assemblies but allows specific exceptions for two consecutive stories to be interconnected with floor openings without a shaft enclosure. Refer to Exceptions 7 and 11 to Section 708.2. Thus, for those cases smoke will be able to readily migrate from one story to the next through the unenclosed floor openings. In that case it seems reasonable that it would not be critical to require the elevator lobby to protect elevator hoistway enclosures from smoke migration. However, we believe that once the elevator shaft interconnects three or more stories, it should be protected against smoke movement through the shaft so as to prevent smoke spread from floor to floor.

It has been well documented that smoke spreads readily throughout the building via the elevator shafts even though the elevator hoistway doors are protected with fire protection rated fire doors. The fact is that such doors are very loose fitting. Even though they pass the fire door test, they will still allow significant quantities of smoke to pass around the edges of the door. Since stack effect occurs in multi-story buildings, the natural tendency for smoke is to migrate toward the elevator shafts. Then the smoke will move either upward or downward, depending upon where the origin of smoke is in relationship to the neutral pressure plane within the building. And then the smoke will leak out of the elevator shafts and spread onto floors remote from the fire floor.

Therefore, we believe that it is important to provide protection for the elevator shaft hoistway doors against the movement of smoke from floor to floor once the elevator intercommunicates more than two stories.

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

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

ICCFILENAME: Thornberry-FS2-708.14.1

FS41-09/10

708.14.1

Proponent: Larry Lincoln representing Utah Chapter of ICC

Revise as follows:

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 including any basements but not any mezzanines*. The lobby enclosure shall separate the elevator shaft enclosure doors from each floor by *fire partitions*. In addition to the requirements in Section 709 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:

(Exceptions to remain unchanged)

Reason: In many parts of the country basements are common and should be included in determining the number of floors where these requirements become effective. The new wording is taken almost word for word from I.B.C. Section 708.4 where the fire-resistance requirements for shafts are required. Since the elevator is in a shaft whose fire-resistance is determined from section 708.4 then it is logical that the threshold for the requirements of 708.14.1 parallel the shaft requirements. In our jurisdiction we have a project where there are four levels of parking under three levels of retail above so the elevators serve seven levels. Under the current code the elevators only serve three stories and none of the safeguards in 708.14.1 would apply.

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

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

ICCFILENAME: Lincoln-FS2-708.14.1

FS42-09/10

708.14.1

Proponent: Sarah A. Rice, representing herself.

Revise as follows:

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 shall separate the elevator shaft enclosure doors from each floor by fire partitions. In addition, to the requirements in Section 709 for fire partitions, doors protecting openings in the elevator lobby enclosure walls, other than the elevator shaft doors, 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:

(Exceptions to remain unchanged)

Reason: The proposed language makes it clear that when an elevator lobby is required by 708.14 or by the area of refuge requirements the doors of the elevator are not required to have the additional smoke protection. As the lobby enclosure requirements were put in place to address smoke that may migrate up through the elevator shaft and spread to other parts of a floor, mandating that the doors have smoke protection is redundant. Therefore the elevator shaft is actually part of the lobby enclosure and does not need to be separated from the elevator lobby as other parts of the floor onto which it opens.

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

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

ICCFILENAME: RICE-FS2-708.14.1

FS43-09/10

708.14.1

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

Revise as follows:

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 709 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 lobby fire door assemblies in accordance with Section 715 shall be tested in accordance with UL 1784 without an artificial bottom seal. Elevator lobbies shall have at least one *means of egress* complying with Chapter 10 and other provisions within this code.

Exceptions:

(Exceptions to remain unchanged)

Reason: UL 1784 for the testing of fire door assemblies is well referenced in Section 715 for smoke and draft control fire door assemblies. The test records the data from the testing and doors assemblies may be tested by the manufacturer with or without an artificial bottom seal- most commonly a layer of duct tape is used for the undercut. Those results are published by UL. The responsibility for the referencing of design or result data from testing is with the Code that references UL 1784. If it simply states testing according to UL 1784, then any door tested with or without an artificial bottom seal can be utilized. Listed fire doors can have as much as 3/4 inch undercut to allow for door swing and uneven floors. Heat and smoke flow from the underside of the door can be significant.

In the case of elevator lobbies, the fire rated elevator shaft protected by fire rated doors in 708.14.1 requires an additional box or lobby in front of it to stall the impact of heat or smoke upon the elevator shaft or in certain cases the movement of heat and smoke from the elevator shaft to upper floors based upon the heat stratification. Pressure differentials between the fire floor, non-fire floors, elevator shafts, interior HVAC operation, and wind loads upon the exterior of the building can all contribute to pressure differences at the elevator lobby. The lobby doors logically should be able to restrict the passage of smoke on all four sides of the door opening- to include the undercut.

Cost Impact: Minimal.

Analysis: Code change proposals FS43 and FS44 address lobby fire door testing without an artificial bottom seal. The committee needs to make its intent clear with respect to these provisions. Standard UL 1784 is currently referenced in the I-codes.

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

ICCFILENAME: Cahanin-FS2-708.14.1-2

FS44-09/10

708.14.1

Proponent: Bob Eugene, representing Underwriters Laboratories Inc

Revise as follows:

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 709 for fire partitions, doors protecting openings in the elevator lobby enclosure walls shall be also comply with Section 715.4.3 as required for *corridor walls with the UL 1784 test conducted without an artificial bottom seal.* ~~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:

(Exceptions to remain unchanged)

Reason: This proposal clarifies that the air leakage rating of smoke and draft control doors protecting openings in elevator lobby enclosure walls shall be determined without an artificial bottom seal in order to replicate the stack effect present in an elevator shaft and hence the elevator lobby. This proposal is consistent with the artificial bottom seal requirements for smoke and draft control doors protecting the lobby of the new Fire Services Access Elevator found in Section 3007.4.3.

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

Analysis: Code change proposals FS43 and FS44 address lobby fire door testing without an artificial bottom seal. The committee needs to make its intent clear with respect to these provisions. Standard UL 1784 is currently referenced in the I-codes.

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

ICCFILENAME: EUGENE-FS1-708.14.1

FS45-09/10

708.14.1

Proponent: Bill Ziegert, representing Smoke Guard, Inc.

Revise as follows:

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 709 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. Access to an exit through an elevator lobby shall be permitted provided that access to at least one other required exit does not require passing through the elevator lobby.

Exceptions:

(Exceptions to remain unchanged)

Reason: Currently there is no prohibition in the code for occupied spaces exiting directly into an elevator lobby. Irrespective of whether the corridors leading to the elevator lobby are rated or not, the elevator lobby is a potentially hazardous area that can be filled with smoke. This change would insure that building occupants would have access to at least one exit without being forced to pass through the elevator lobby. Note that this language is already part of the current New York City Building Code which is based upon the IBC.

Cost Impact: No additional costs, since it is possible with the beginning design to structure the corridor system to provide direct access to at least one exit.

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

ICCFILENAME: ZIEGERT-FS3-708.14.1

FS46–09/10

708.14.1

Proponent: Dave Frable, U.S. General Services Administration, representing the U.S. General Services Administration

Revise as follows:

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 709 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 level(s) of exit discharge street floor, provided the level(s) of exit discharge entire street floor is equipped with an *automatic sprinkler system* in accordance with Section 903.3.1.1.

(Exceptions not shown, remain unchanged)

Reason: The intent of this code change is to only replace the undefined term “street floor” with the defined term “level of exit discharge”.

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

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

ICCFILENAME: Frable-FS2-708.14.1

FS47–09/10

708.14.1

Proponent: Bob Eugene, Underwriters Laboratories Inc, representing Underwriters Laboratories Inc

Revise as follows:

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 709 for fire partitions, doors protecting openings in the elevator lobby enclosure walls shall be 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:

(Exception 1 and 2 remain unchanged)

3. Enclosed elevator lobbies are not required where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be comply with the smoke and draft control door assembly requirements in Section 715.4.3.1 when tested in accordance with UL 1784 without an artificial bottom seal.

(Exception 4 through 7 remain unchanged)

Reason: As written, Exception 3 does not contain requirements for the allowable air leakage for this additional door, it just describes the test method to be used to measure the leakage. The proposed language fixes this hole in the code by referencing the maximum air leakage requirements in Section 715.4.3.1. A similar reference to 715.4.3.1 is used for smoke and draft control doors protecting the lobby of the new Fire Services Access Elevator in Section 3007.4.3.1.

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

FS48-09/10

708.14.1

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

Revise as follows:

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 709 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 708.2 are not required to have enclosed elevator lobbies.
3. Enclosed elevator lobbies are not required 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~~ horizontal or vertical 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 occupancies,
 - 4.2. Group I-3 occupancies, and
 - 4.3. High-rise buildings.
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 711 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 711.5.2, 711.5.3, and 715.4.8 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 708.14.2.
7. Enclosed elevator lobbies are not required where the elevator serves only *open parking garages* in accordance with Section 406.3.

Reason: UL 1784 for the testing of fire door assemblies is well referenced in Section 715 for smoke and draft control fire door assemblies. Newer applications of in-the-field or aftermarket seals may not have been tested in the orientation utilized on elevator doors they are being installed upon. This change by its simple removal or either artificial horizontal or vertical bottom seals (duct tape) from material tested will insure that the as-installed assembly is an as-tested assembly consistent with IBC Section 715.4.3.1 intent.

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

FS49-09/10

708.14.1

Proponent: Michael Perrino, Code Consultants, Inc., representing Code Consultants, Inc.

Revise as follows:

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 709 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 708.2 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 Section 903.3.1.1 or 903.3.1.2. This exception shall not apply to the following:
 - 4.1. Group I-2 occupancies;
 - 4.2. Group I-3 occupancies, and;
 - 4.3. Elevators serving floor levels over 75 feet above the lowest level of fire department vehicle access in high-rise buildings.
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 711 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 711.5.2, 711.5.3, and 715.4.8 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 708.14.2.
7. Enclosed elevator lobbies are not required where the elevator serves only *open parking garages* in accordance with Section 406.3.

Reason: Current language requires all elevators in a high rise to be provided with lobbies, regardless of number of stories or height of the stories served. The reason that the code requires lobbies is to ameliorate the potential problems associated with stack effect. However, as with smoke proof enclosures, stack effect does not become an issue until the shaft (or in the case of elevators, the hoistway) serves floors over 75 feet above the lowest level of fire department vehicle access.

Many high-rise buildings have numerous elevators that serve only the lower floors of the building. This proposal brings the requirements for addressing the potential issues associated with stack effect in elevator hoistways serving high rise buildings into line with those for stairs.

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

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

ICCFILENAME: PERRINO-FS1-708.14.1

FS50–09/10

708.14.1

Proponent: Bill Ziegert, representing Smoke Guard, Inc.

Revise as follows:

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 709 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:

(Exceptions 1 through 4 remain unchanged)

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 711 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 711.5.2, 711.5.3, and 715.4.8 and duct penetrations of the smoke partitions shall be protected as required for *corridors* in accordance with Section 716.5.4.1. When egress to any exit on a floor requires occupants to pass through an enclosed elevator lobby constructed as a smoke partition, the elevator hoistway doors opening into the lobby shall also meet the requirements for smoke and draft control door assemblies in Section 715.4.3.1.

(Exceptions 6 and 7 remain unchanged)

Reason: When the building floor plan allows occupants to pass through an enclosed elevator lobby constructed as a smoke partition to reach the exits, the elevator hoistway doors within the lobby do not meet the opening protective requirements of Section 715.4.3.1 for Smoke and Draft Control. If all other openings in the perimeter must meet quantifiable smoke / air leakage requirements, the elevator hoistway doors, which often have effective leakage openings of a hole greater than eight inches in diameter, should also meet the similar performance standards. To not require this would be to allow a breach in the Smoke Partition construction.

Cost Impact: Some additional costs to provide smoke gasketing at the elevator hoistway doors.

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

ICCFILENAME: ZIEGERT-FS1-708.14.1

FS51-09/10

708.14.1-708.14.2.11

Proponent: Mike Ashley, CBO, representing Alliance for Fire & Smoke Containment & Control, Inc.

Revise as follows:

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 709 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 708.2 are not required to have enclosed elevator lobbies.
3. Enclosed elevator lobbies are not required 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 occupancies;
 - 4.2. Group I-3 occupancies; and
 - 4.3. High-rise buildings.
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 711 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 711.5.2, 711.5.3, and 715.4.8

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 708.14.2.~~
- 7 6. Enclosed elevator lobbies are not required where the elevator serves only *open parking garages* in accordance with Section 406.3.

Delete without substitution:

~~**708.14.2 Enclosed elevator lobby.** Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with this section.~~

~~**708.14.2.1 Pressurization requirements.** Elevator hoistways shall be pressurized to maintain a minimum positive pressure of 0.10 inches of water (25 Pa) and a maximum positive pressure of 0.25 inches of water (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.~~

~~**708.14.2.2 Rational analysis.** A rational analysis complying with Section 909.4 shall be submitted with the *construction documents*.~~

~~**708.14.2.3 Ducts for system.** Any duct system that is part of the pressurization system shall be protected with the same *fire-resistance rating* as required for the elevator shaft enclosure.~~

~~**708.14.2.4 Fan system.** The fan system provided for the pressurization system shall be as required by this section.~~

~~**708.14.2.4.1 Fire resistance.** When located within the building, the fan system that provides the pressurization shall be protected with the same *fire-resistance rating* required for the elevator shaft enclosure.~~

~~**708.14.2.4.2 Smoke detection.** The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system.~~

~~**708.14.2.4.3 Separate systems.** A separate fan system shall be used for each elevator hoistway.~~

~~**708.14.2.4.4 Fan capacity.** The supply fan shall either be adjustable with a capacity of at least 1,000 cfm (.4719 m³/s) per door, or that specified by a *registered design professional* to meet the requirements of a designed pressurization system.~~

~~**708.14.2.5 Standby power.** The pressurization system shall be provided with standby power from the same source as other required emergency systems for the building.~~

~~**708.14.2.6 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.~~

~~**708.14.2.7 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.~~

~~**708.14.2.8 Marking and identification.** Detection and control systems shall be marked in accordance with Section 909.14.~~

~~**708.14.2.9 Control diagrams.** Control diagrams shall be provided in accordance with Section 909.15.~~

~~**708.14.2.10 Control panel.** A control panel complying with Section 909.16 shall be provided.~~

~~**708.14.2.11 System response time.** Hoistway pressurization systems shall comply with the requirements for smoke control system response time in Section 909.17.~~

Reason: This proposed change deletes the option to provide for pressurization of the elevator shaft as an equivalent solution to the use of the enclosed elevator lobby and other alternatives described in Section 708.14.1. The intent of this section is to define compliance alternatives that provide equivalent protection of the elevator shaft from vertical smoke migration. In the case of the elevator shaft pressurization option defined in Section 708.14.2, questions have been raised as to the effective equivalency of this option with the others. If elevator shaft pressurization is chosen as an alternative solution, it must work effectively in conjunction with other building systems, and particularly with stair shaft pressurization which is a requirement for buildings as required in Sections 403.5, 1022.9 and 909.20.5. Stair shaft pressurization must maintain a minimum pressure differential of 0.10 inches of water (25 Pa) (Section 909.20.5) and a maximum pressure differential of 0.35 inches of water (87 Pa). Section 708.14.2.1 requires a pressurization differential of between 0.10 (minimum) and 0.25 (maximum) inch water gauge. This can cause interference between the two pressurization systems as the two systems must be balanced so that they can operate simultaneously. This balance is difficult to attain as the stair shaft pressurization system operates with only one leakage point per floor at the egress door into the stair shaft. The elevator shaft pressurization system must maintain the designated pressure differential across a much larger leakage area, usually multiple elevator door and frame systems at each floor. The leakage at the stair shaft at the door will typically be 200 cfm or less, while the leakage across a standard two leaf 3.5 ft by 7 ft elevator door and frame will be 600 – 900 cfm. Most floors will have two to three openings per floor, providing for a much larger leakage area to be overcome by the elevator shaft pressurization system.

A recent study published in *Building and Environment Journal* raised this question of competing pressurization systems. The study, "On stairwell and elevator shaft pressurization for smoke control in tall buildings", by Dr. Richard S. Miller and Dr. Don Beasley, with the Department of Mechanical Engineering at Clemson University, studied three scenarios: operation of the stair shaft pressurization system alone, operation of the elevator shaft pressurization system alone, and operation of the two systems simultaneously. They used the CONTAM simulation software to model these three scenarios in both a residential and commercial building thirty stories in height. The two occupancy types selected used data driven exterior leakage rates from documented sources. CONTAM is one of the key tools developed and used by NIST in modeling computational fluid dynamics scenarios for smoke travel in building fires.

The study found that stair shaft pressurization was feasible because the stair shaft has only one entry point per floor, and the single gasketed swing door at that point of entry represents a relatively small leakage area. When elevator shaft pressurization air flow was analyzed, the study found that (quoting for the abstract section) "...elevator shaft pressurization systems are found to produce prohibitively large pressure differences across both the elevator and stairwell doors if (1) minimum pressure differences must be maintained at both open and closed elevator doors, and (2) if the system must function properly when the ground floor exterior building doors are closed." This was found to be true even with the revised positive pressure limits provided in Section 708.14.2.1 (minimum positive pressure of 0.10 inches of water (25 Pa) and a maximum positive pressure of 0.25 inches of water (67 Pa) with respect to adjacent occupied space on all floors.

The study concluded that this was due primarily to the much larger leakage rates at the elevator door and frame, and the substantially added leakage that occurs on the Phase I recall floor where the doors are parked in the open position. Because the ground floor exterior doors (typically the Phase I recall floor) are normally closed, this results in over pressurization of this floor. The effect is that "the across elevator door pressure difference is increased substantially on the second floor (as well as on all the remaining floors). The elevator shaft pressurization system also interfered with the stair shaft pressurization system in the modeling scenarios due to the high pressures that were needed to provide positive pressure in the elevator shaft. The study also found that "fan location, vents, and louvers were all found to be ineffective as means of controlling the shaft pressures." In addition, the study found that "...substantially different fan flow rates are required based on the exterior temperature (Table 3). Therefore, a system calibrated and tested during one season may have significantly different behavior during other seasons."

The data generated by this study raises the question as to whether or not elevator shaft pressurization should be considered as a functionally equivalent solution to the other code compliant solutions defined in Section 707.18.1 for protecting the elevator shaft from vertical smoke migration. It is also generally known that testing and commissioning elevator shaft pressurization systems is difficult and susceptible to daily variations in atmospheric temperature.

For these reasons, we urge the membership to approve this code change as submitted.

References:

Miller, Richard S. and Beasley, D. On stairwell and elevator shaft pressurization for smoke control in tall buildings, *Building and Environment* (2008), doi:10.1016/j.buildenv.2008.09.015

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

Analysis: Code change proposals FS51, FS52 and FS53 address elevator lobby pressurization requirements. FS51 deletes the requirements and FS52 and FS53 revise the requirements. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: ASHLEY-FS1-708.14.1.doc

FS52–09/10

708.14.2

Proponent: Bill Ziegert, representing Smoke Guard, Inc.

Revise as follows:

708.14.2 Enclosed elevator lobby. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with this section. When elevator hoistway pressurization is provided, the pressurization of exit stair enclosures under Section 1022.9 is not permitted.

Reason: Recent computer modeling by experts has called into question the ability of an elevator pressurization system to meet the differential pressure requirements of Section 708.14.2.1 across the hoistway doors. In addition this same modeling has determined that while it is relatively easy to design a stand alone exit stair pressurization system that can meet all the requirements of the code, the simultaneous operation of an elevator hoistway pressurization system and exit stair pressurization system causes the two systems to be negatively impacted and the most serious negative impact is to the exit stair pressurization system. The authors have concluded that an elevator hoistway pressurization system operated in conjunction with stair pressurization would result in door opening forces for the exit stair doors substantially above the allowable limits. For additional information see <http://www.ces.clemson.edu/~rm/PDF/BandE.pdf>

Cost Impact: Moderate cost increase as vestibules would be required in lieu of stair pressurization equipment.

Analysis: Code change proposals FS51, FS52 and FS53 address elevator lobby pressurization requirements. FS51 deletes the requirements and FS52 and FS53 revise the requirements. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: ZIEGERT-FS4-708.14.2

FS53–09/10

708.14.2.3 (New)

Proponent: Bill Ziegert, representing Smoke Guard, Inc.

Add new text as follows:

708.14.2.3. Exit Discharge door position. When elevator hoistway pressurization is activated at least two exit discharge doors to the outside of the building shall be automatically opened and shall remain open for the duration of the operation of the pressurization system. The open exit discharge doors shall be in addition to other doors required to be open for atrium air flow or smoke control systems.

(Renumber subsequent sections)

Reason: Recent computer modeling by experts has called into question the ability of an elevator pressurization system to meet the differential pressure requirements of Section 708.14.2.1 across the hoistway doors. The difficulty is caused by the necessity to design the system to work properly during Elevator Phase 1 Recall where the elevators return to the recall floor and park with the hoistway doors open for the duration of the emergency or until the Fire Service commandeers them under Phase 2.

Unless other precautions are undertaken, the models suggest that if the minimum differential pressure is achieved across the hoistway door openings on the recall floor, all other floors above this will see excessive pressures beyond the code limits and beyond the ability of the elevator doors to operate properly.

Two solutions were proposed including a) opening doors to the outside, or alternately b) providing an enclosed elevator lobby at the recall floor. Only the option of opening doors to the outside is viable however since elevator lobbies at the recall floor would serve minimal benefit as occupants would continually be opening the lobby doors during evacuation thereby defeating the intended purpose.

For additional information see <http://www.ces.clemson.edu/~rm/PDF/BandE.pdf>

Cost Impact: Minimal cost impact for automatic door opener systems

Analysis: Code change proposals FS51, FS52 and FS53 address elevator lobby pressurization requirements. FS51 deletes the requirements and FS52 and FS53 revise the requirements. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: ZIEGERT-FS5-708.14.2.3

FS54–09/10

708.14.1

Proponent: Dave Frable, U.S. General Services Administration, representing the U.S. General Services Administration

Revise as follows:

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 709 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 708.2 are not required to have enclosed elevator lobbies.
3. Enclosed elevator lobbies are not required 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 occupancies;
 - 4.2. Group I-3 occupancies; and
 - 4.3. High-rise buildings, except as permitted in exception 5.
5. Enclosed elevator lobbies are not required in Group B occupancies with an occupied floor not greater than 420 feet in height above the lowest level of fire department vehicle access that are protected throughout by an automatic fire sprinkler system designed and installed in accordance with Section 903.3.1.1 and maintained in accordance with Section 903.5.
- ~~6~~ 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 711 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 711.5.2, 711.5.3, and 715.4.8 and duct penetrations of the smoke partitions shall be protected as required for *corridors* in accordance with Section 716.5.4.1.
- ~~7~~ 6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 708.14.2.
- ~~8~~ 7. Enclosed elevator lobbies are not required where the elevator serves only *open parking garages* in accordance with Section 406.3.

Reason: The intent of this code change is to acknowledge that Group B occupancies with an occupied floor not greater than 420 feet in height above the lowest level of fire department vehicle access that are protected by an operational automatic fire sprinkler system provide an acceptable level of safety for building occupants and therefore do not warrant the need for enclosed elevator lobbies.

During the 2006/2007 ICC Code Development Hearings in Orlando, the Fire Safety Code Committee approved a similar code change proposal (FS54-06/07) that acknowledged that Group B occupancies of any height that are protected by an operational automatic fire sprinkler system provided an acceptable level of safety for building occupants and therefore did not warrant the need for enclosed elevator lobbies for the following reasons:

1. The proposal ties the exception to a specific occupancy which has a good fire record.
2. The NIST analysis is new technical data that shows a justification for this proposal.
3. The NIST study did address smoke flow in both winter and summer for this low hazard occupancy. When combined with the excellent fire safety record for high-rise buildings, both sprinklered and unsprinklered, this exception appears justified and will help to eliminate this contentious issue which has come before the committee for several years.

However, at the Final Action Hearings of the ICC in May 2007, the ICC membership voted to overturn the Fire Safety Code Committee's recommendation and disapproved the subject code change. At the Hearings, no new technical information was provided to discount any of the Fire Safety Committee's aforementioned rationale for approval as submitted other than several opponents were concerned that it would apply to high-rise office buildings of any height; even those super high-rise office buildings greater than 420 feet in height, where the potential for stack effect in certain areas of the country may be greater and result in the vertical smoke migration through the elevator hoistways.

Therefore, to address this concern, we have limited exception 5 to only apply to Group B occupancies with an occupied floor not more than 420 feet in height above the lowest level of fire department vehicle access.

In addition, the previous research conducted by the National Institute of Standards and Technology (NIST) has shown that sprinklered fires do not represent a significant hazard to the building occupants because the automatic sprinklers activated and extinguished the fire prior to releasing a significant energy or mass. Little or no smoke or gases entered the hoistways, and none reached remote locations in any building regardless of height or other conditions examined¹. Therefore, it can be concluded that smoke spread in shafts and elevator hoistways is not a problem in Group B occupancies protected throughout with an operational fire sprinkler system since the fire sprinklers both control the burning rate (and thus limit smoke production) and maintain near ambient temperature which limits the buoyancy forces that drive smoke to the shafts where stack effect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires². This conclusion can also be substantiated from a paper presented by Dr. John Klote at the Elevator Symposium on Emergency Use of Elevators in March 2004 and in an article titled "Is There A Need to Enclose Elevator Lobbies In Tall Buildings?", written by Richard Bukowski in the August 2005 *Building Safety Journal*.

In addition, all high-rise fires where smoke spread has been a problem have either been in unsprinklered buildings or partially sprinklered buildings. A recent comprehensive analysis in 2005 of high-rise fires by NFPA identified that no fatalities had occurred for more than a decade in any U.S. high-rise occupancy (> 10 story) other than the 6 fatalities in the unsprinklered Cook County Office Building (2003); the 1 fatality in the unsprinklered First Interstate Bank Building (1991); and 3 firefighter fatalities in the partially sprinklered (unsprinklered on floor of fire origin and several floors above) Meridan Plaza Building (1991). The Murrah Federal Building (1995) and the World Trade Center (1993 & 2001) bombings were excluded from this analysis.

Fire sprinklers control the burning rate (and thus limit smoke production) and maintain near ambient temperature which limits the buoyancy forces that drive smoke to the shafts where stack effect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires. The reliability of sprinklers should not be called into question as an NFPA report issued in 2005 indicated that automatic fire sprinklers successfully operating in reported structural fires was an exemplary 93%. This same report indicated that two-thirds of the automatic fire sprinkler system failures were because the automatic fire sprinkler

systems were shut off, an unlikely scenario where jurisdictions adopt the IBC since the IBC requires the supervision of the automatic fire sprinkler system. Hence, the successful operation of an automatic fire sprinkler system designed and installed in compliance with the IBC requirements could be reasonably estimated at 98% (or better, since NFPA indicated that a number of fire incidents extinguished by sprinklers may not even be reported).

In addition to fire sprinklers in these buildings, the 2009 edition of the IBC now requires a number of additional safety enhancements such as: enclosed elevator lobbies for fire service access elevators in buildings greater than 120 feet; enclosed elevator lobbies for occupant evacuation elevators where utilized; two way communication at all elevator landings; an increase of 50% in egress capacity for exit stairs in all buildings; increased cohesive/adhesive bond strength for sprayed fire resistive materials; exit stair path markings in all high rise buildings; etc.

Given the aforementioned protection coupled with the excellent track record for sprinklered B occupancies, and keeping in mind that the purpose of the IBC is to provide minimum requirements to safeguard occupants of buildings from fire and other hazards attributed to the built environment based on sound technical documentation. Also keep in mind that fatalities are very rare in office buildings, even rarer in high-rise office buildings, and surpassingly rare in high-rise office buildings protected with an operational fire sprinkler system.

Last but not least, it should be noted that a similar proposal regarding the enclosure of elevator lobbies was also addressed by the National Fire Protection Association (NFPA) 101 Technical Committee on Industrial, Storage, and Miscellaneous (e.g., High-rise) Occupancies. The NFPA Technical Committee did not approve the proposal to separate elevator hoistways with smoke barriers in sprinkler high-rise buildings based on a lack of technical substantiation. In addition, on June 9, 2005 the NFPA membership approved the 2006 edition of NFPA 101 and supported the Technical Committee's decision to not include a requirement to separate elevator hoistways with smoke barriers in sprinkler high-rise buildings.

Based on all these points stated above, we strongly believe that it is reasonable to state that Group B occupancies that are not more than 420 feet in height, and protected throughout with automatic fire sprinkler system is not a rationale alternative to enclosed elevator lobbies and that automatic fire sprinklers are not an effective method for slowing or stopping the spread of smoke throughout a building protected throughout with an operational automatic fire sprinkler system. In addition, we believe the current requirement for enclosing elevator lobbies in Group B occupancies not more than 420 feet in height, protected throughout by an operational automatic fire sprinkler system has not been based on sound technical documentation and will significantly increase building construction and maintenance costs without increasing the overall safety to the building occupants.

References:

Klote, J.H., Analysis of the Consequences of Smoke Migration through Elevator Shafts, Use of Elevators in Fires and Other Emergencies Workshop. Proceedings. Co-Sponsored by American Society of Mechanical Engineers (ASME International); National Institute of Standards and Technology (NIST); International Code Council (ICC); National Fire Protection Association (NFPA); U.S. Access Board and International Association of Fire Fighters (IAFF). March 2-4, 2004, Atlanta, GA, Guide on Methods for Evaluating Potential for Room Flashover, NFPA 555 2000 ed., Nat Fire Prot Assn, Quincy, MA.

Bukowski, R. W., Is There A Need to Enclose Elevator Lobbies In Tall Buildings?, Building Safety Journal, 26-31 pp, August 2005.

Rohr, K.D and Hall, J.R., Jr., U.S. Experience With Sprinklers and Other Fire Extinguishing Equipment, August 2005.

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

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

ICCFILENAME: Frable-FS3-708.14.1-2

FS55-09/10 708.14

Proponent: Gene Boecker, Code Consultants, Inc., representing self

Revise as follows:

708.14 Elevator, dumbwaiter and other hoistways. Elevator, dumbwaiter and other hoistway enclosures shall be constructed in accordance with Section 708 and Chapter 30. Where an elevator shaft enclosure connects more than three stories, the elevator enclosure opening protection shall comply with either Section 708.14.1 or Section 744.8.2 708.14.2.

Exceptions:

1. 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. Where elevators are not required to be located in a shaft in accordance with Section 708.2 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. 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 occupancies;
 - 4.2 Group I-3 occupancies; and
 - 4.3 High-rise buildings.
5. Where the elevator hoistway is pressurized in accordance with Section 708.14.2 708.14.3.
6. Where the elevator serves only open parking garages in accordance with Section 406.3.

708.14.1 Smoke and draft control doors. The elevator shaft enclosure doors shall comply with Section 715.4.3 and shall be labeled as smoke and draft control doors in accordance with Section 715.4.6.3.

708.14.1 708.14.2 Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The elevator lobby enclosure shall separate the elevator shaft enclosure doors from each floor by fire partitions. In addition to the requirements in Section 709 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 708.2 are not required to have enclosed elevator lobbies.~~
3. ~~Enclosed elevator lobbies are not required 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. ~~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 occupancies;~~
 - 4.2 ~~Group I-3 occupancies; and~~
 - 4.3 ~~High-rise buildings.~~
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 711 for smoke partitions, doors protecting openings in the smoke partitions shall also comply with Sections 711.5.2, 711.5.3, and 715.4.8 and duct penetrations of 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 708.14.2.~~
7. ~~Enclosed elevator lobbies are not required where the elevator serves only open parking garages in accordance with Section 406.3.~~

708.14.1.1 708.14.2.1 Areas of refuge. Areas of refuge shall be provided as required by Section 1007.

(Renumber subsequent sections)

Reason: The whole reason why we have the requirements for the elevator lobby is due to the absence of a smoke tested opening protective. This small fact, however, is never stated anywhere in the code. The proposal restructures the language without changing the intent or application but makes it clear that if such a smoke tested door can be provided, then the elevator lobby would not be required. A decision is placed in the main Section consistent with the threshold for elevator lobbies in new buildings. The text is relocated from existing Section 708.14.1.

The majority of the exceptions relocated to the main section (708.14) are applicable regardless of the decision to install a smoke tested opening protective or to us the elevator lobby exceptions as they currently apply. Only exception #5 remains associated with the elevator lobby section since it applies to the alternative design for the elevator lobby enclosure walls where the building is protected throughout with sprinklers.

The intent is not to change the lobby provisions elsewhere in the code for Areas of refuge (1007.6) or for Occupant evacuation elevators (3008.11) or to change the overall provisions as they currently appear. It just seems logical that we identify what the issue is with the code requirement. As the code is written now, even if the technology existed to provide a tight smoke seal on the elevator doors, an elevator lobby would still be required. The code change clarifies the intent and opens the way to technological innovation to address the underlying reason for the elevator lobby.

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

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

ICCFILENAME: BOECKER-FS1-708.14

07/08 Cycle: FS46 through FS60

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FS46-07/08

707.14.1

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

Revise as follows:

707.14.1 (Supp) Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than ~~three~~ two 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.

Reason: Currently this Section triggers the requirement for enclosed elevator lobbies when the elevator shaft enclosure connects more than three stories. The purpose of this code change proposal is to reduce the threshold to where the elevator shaft enclosure connects more than two stories. This is generally consistent with Section 707 Shaft Enclosures which requires shaft enclosures for openings that pass through a floor/ceiling assembly but allows specific exceptions for two consecutive stories to be interconnected with floor openings without a shaft enclosure. Thus, for those cases smoke will be able to fairly readily migrate from one story to the next. In that case it seems reasonable that it would not be critical to require the elevator lobby to protect elevator hoist way enclosures from smoke migration. However, we believe that once the elevator shaft interconnects three or more stories, it should be protected against smoke movement through the shaft so as to prevent smoke spread from floor to floor. It has been well documented that smoke spreads readily throughout the building via the elevator shafts even though the elevator hoist way doors are protected with fire protection rated fire doors. The fact is that such doors are very loose fitting and even though they pass the fire test, they will allow significant quantities of smoke to pass around the edges of the door. Since stack effect occurs in multi-story buildings, the natural tendency for smoke is to migrate toward the elevator shafts and then move either upward or downward depending upon where the origin of smoke is in relationship to the neutral pressure plane within the building and then spread out of the shafts accordingly.

Therefore, we believe that it is important to provide protection for the elevator shaft hoist way doors against the movement of smoke from floor to floor once the elevator intercommunicates more than two stories.

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

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

FS47-07/08

707.14.1

Proponent: Frank Hertzog, Smoke Safety Council

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

Reason: This amendment correlates Section 707.14.1, Exception 4 with the initial charging language in Section 707.14.1 which states that the enclosed elevator lobby prescribed “(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.” and with Table 1017.1. Table 1017.1 prescribes where these fire rated corridors are required in buildings without sprinklers as well as in occupancies where buildings are equipped with sprinklers. This table reflects the fact that fire risk varies by occupancy and that certain occupancies, even with sprinklers systems installed, are required to have fire rated corridors because they present greater risk of loss from fire and smoke than the other occupancies that are not required to have fire rated corridors if sprinkler systems are installed.

These occupancies (I-1, I-3, R, H-1, H-2, H-3, H-4, H-5) require the added protection from both fire and smoke when they exceed the floor height stated in the Section 707.14.1 charging language (“...where an elevator shaft enclosure connects more than three stories”). For example, Section 707.14.1 with Exception 4, as it presently reads, would allow the construction of a six story H (hazardous) occupancy without the requirement to provide any separation of the elevator shaft from the corridors into which the elevator opens. In this example, as substantial smoke can be generated even in sprinklered fires, this would allow smoke migration via the elevator shaft to hinder efforts of occupants to evacuate as well as fire fighter efforts to locate occupants and discover the seat of the fire. Since as much as 65% of smoke migration can occur via the elevator shaft, this presents a recognized hazard.

This change correlates the language throughout Section 707.14.1 and Table 1017.1 with the intent to provide the fire and smoke protection that this section prescribes for buildings with elevator shafts. As the building code prescribes the minimum level of fire and life safety protection, this change clarifies the minimum protection required for the occupancies with greater fire risk that require fire rated corridors per Table 1017.1.

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

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

FS48-07/08

707.14.1

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

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 required fire-resistance rating of the corridor per Section 1017 and the required opening protection. Where corridors are not provided, or, are not required to be of fire-resistance rated construction by other sections of this code, the elevator shaft enclosure doors shall be separated from each floor by smoke partitions. Doors in such smoke partitions shall meet the requirements of 710.5.2 and 710.5.3. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

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

Reason: The purpose of this code change is to clarify the intent of the current code. Existing code language requires that elevator lobbies be constructed as fire partitions “equal to the fire resistance rating of the corridor”. Elevators often open onto “open plan” office scenarios where there are no corridors. Furthermore, the code allows unrated corridors in I-2 occupancies (per 407.3); certain sprinklered occupancies; and other locations per Section 1017.1. Relating the term fire partitions to unrated corridors or nonexistent corridors leads to confusion. This change clarifies the code by giving the reviewer/designer direction on how to deal with these two conditions. A smoke partition is required in both cases to prevent the migration of smoke. The additional language regarding doors is provided so as to provide an approach similar to exception 3.

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

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

FS49–07/08

707.14.1

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

Revise as follows:

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

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.

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

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

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

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

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

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

FS50–07/08

707.14.1

Proponent: Thomas Kinsman, T. A. Kinsman Consulting Company, representing himself

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. The~~ means of egress from the elevator lobby shall comply with Chapter 10.

Exceptions:

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

6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: The intent of this proposal is to only clarify what is believed to be the intent of the current language, which is to provide conforming egress from elevator lobbies. The reference to Chapter 10 is important to ensure that lobby doors are not inappropriately locked, that they don't create dead end corridors, and that two means of egress are provided when otherwise required. In some instances the current language has been interpreted to permit only one means of egress on large lobbies. The revised language makes a general reference to Chapter 10 and strikes the reference to "other provision of the code".

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

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

FS51-07/08

707.14.1

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

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.

Reason: The prescribed test protocol of UL 1784 requires the application of an artificial bottom seal. It is not an optional part of the test.

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

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

FS52-07/08

707.14.1

Proponent: Bob Eugene, Underwriters Laboratories Inc.

Revise as follows:

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

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

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall ~~be~~ meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784 without an artificial bottom seal. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 m³/(s m²) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature test and the elevated temperature exposure test. Installation of smoke doors shall be in accordance with NFPA 105.
4. In other than Group I-2 and I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

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

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

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

FS53-07/08

707.14.1

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

Revise as follows:

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

Exceptions:

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

- 4.3. Buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, and
- 4.4. Buildings in Seismic Design Category D, E, or F.
- 5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
- 6. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

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

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

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

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

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

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

FS54-07/08

707.14.1

Proponent: David Frable, US General Services Administration

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. Group B occupancies with an occupied floor not more than 420 feet in height above the lowest level of fire department vehicle access that are protected throughout by an automatic fire sprinkler system designed

and installed in accordance with Section 903.3.1.1 and maintained in accordance with Section 903.5 are not required to be provided with enclosed elevator lobbies.

- 5 6. 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 7. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: The purpose of this code change is to acknowledge that Group B occupancies with an occupied floor not more than 420 feet in height above the lowest level of fire department vehicle access that protected by an operational automatic fire sprinkler system provide an acceptable level of safety for building occupants and therefore do not warrant the need for enclosed elevator lobbies.

During the 2006/2007 ICC Code Development Hearings in Orlando, the Fire Safety Code Committee approved a similar code change proposal (FS54-06/07) that acknowledged that Group B occupancies of any height that are protected by an operational automatic fire sprinkler system provided an acceptable level of safety for building occupants and therefore did not warrant the need for enclosed elevator lobbies for the following reasons:

1. The proposal ties the exception to a specific occupancy which has a good fire record.
2. The NIST analysis is new technical data that shows a justification for this proposal.
3. The NIST study did address smoke flow in both winter and summer for this low hazard occupancy. When combined with the excellent fire safety record for high-rise buildings, both sprinklered and unsprinklered, this exception appears justified and will help to eliminate this contentious issue which has come before the committee for several years.

However, at the Final Action Hearings of the ICC in May 2007, the ICC membership voted to overturn the Fire Safety Code Committee's recommendation and disapproved the subject code change. At the Hearings, no new technical information was provided to discount any of the Fire Safety Committee's aforementioned rationale for approval as submitted other than several opponents were concerned that it would apply to high-rise office buildings of any height; even those super high-rise office buildings greater than 420 feet in height, where the potential for stack effect in certain areas of the country may be greater and result in the vertical smoke migration through the elevator hoistways.

Therefore, to address this concern, we have limited exception 5 to only apply to Group B occupancies with an occupied floor not more than 420 feet in height above the lowest level of fire department vehicle access.

In addition, the previous research conducted by the National Institute of Standards and Technology (NIST) with consultation by Dr. John Klote, has shown that sprinklered fires do not represent a significant hazard to the building occupants because the automatic sprinklers activated and extinguished the fire prior to releasing a significant energy or mass. Little or no smoke or gases entered the hoistways, and none reached remote locations in any building regardless of height or other conditions examined¹. Therefore, it can be concluded that smoke spread in shafts and elevator hoistways is not a problem in Group B occupancies protected throughout with an operational fire sprinkler system since the fire sprinklers both control the burning rate (and thus limit smoke production) and maintain near ambient temperature which limits the buoyancy forces that drive smoke to the shafts where stack effect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires². This conclusion can also be substantiated from a paper presented by Dr. John Klote at the Elevator Symposium on Emergency Use of Elevators in March 2004 and in an article titled "Is There A Need to Enclose Elevator Lobbies In Tall Buildings?", written by Richard Bukowski in the August 2005 *Building Safety Journal*.

In addition, all high-rise fires where smoke spread has been a problem have either been in unsprinklered buildings or partially sprinklered buildings. A recent comprehensive analysis in 2005 of high-rise fires by NFPA identified that no fatalities had occurred for more than a decade in any U.S. high-rise occupancy (> 10 story) other than the 6 fatalities in the unsprinklered Cook County Office Building (2003); the 1 fatality in the unsprinklered First Interstate Bank Building (1991); and 3 firefighter fatalities in the partially sprinklered (unsprinklered on floor of fire origin and several floors above) Meridian Plaza Building (1991). The Murrah Federal Building (1995) and the World Trade Center (1993 & 2001) bombings were excluded from this analysis.

The recently issued NFPA 2005 report on sprinkler reliability also indicated that automatic fire sprinklers successfully operating in reported structural fires was an exemplary 93%. In addition, NFPA also reported that two-thirds of the reported automatic fire sprinkler system failures were because the automatic fire sprinkler systems were shut off.³ Since the IBC requires the supervision of the automatic fire sprinkler system, one can conclude that the successful operation of an automatic fire sprinkler system designed and installed in compliance with the IBC requirements could be reasonably estimated at 98%. NFPA also reported that the percentage of successfully operating automatic fire sprinkler systems is probably higher since a large percentage of small fire extinguished by fire sprinklers are not reported. Therefore, for an automatic fire sprinkler system designed and installed in accordance with the IBC requirements, the successful operation of an automatic fire sprinkler system could be reasonably estimated at 98% or more.

Please also keep in mind that the purpose of the International Building Code is to provide minimum requirements to safeguard occupants of buildings from fire and other hazards attributed to the built environment that are based on sound technical documentation. Also keep in mind that fatalities are very rare in office buildings, even rarer in high-rise office buildings, and surpassingly rare in high-rise office buildings protected with an operational fire sprinkler system.

Last but not least, it should be noted that a similar proposal regarding the enclosure of elevator lobbies was also addressed by the National Fire Protection Association (NFPA) 101 Technical Committee on Industrial, Storage, and Miscellaneous (e.g., High-rise) Occupancies. The NFPA Technical Committee did not approve the proposal to separate elevator hoistways with smoke barriers in sprinkler high-rise buildings based on a lack of technical substantiation. In addition, on June 9, 2005 the NFPA membership approved the 2006 edition of NFPA 101 and supported the Technical Committee's decision to not include a requirement to separate elevator hoistways with smoke barriers in sprinkler high-rise buildings.

Based on all these points stated above, we strongly believe that it is reasonable to state that Group B occupancies that are not more than 420 feet in height, and protected throughout with automatic fire sprinkler system is not a rationale alternative to enclosed elevator lobbies and that automatic fire sprinklers are not an effective method for slowing or stopping the spread of smoke throughout a building protected throughout with an operational automatic fire sprinkler system. In addition, we believe the current requirement for enclosing elevator lobbies in Group B occupancies not more than 420 feet in height, protected throughout by an operational automatic fire sprinkler system has not been based on sound technical documentation and will significantly increase building construction and maintenance costs without increasing the overall safety to the building occupants.

References:

- Klote, J.H., Analysis of the Consequences of Smoke Migration through Elevator Shafts, Use of Elevators in Fires and Other Emergencies Workshop. Proceedings. Co-Sponsored by American Society of Mechanical Engineers (ASME International); National Institute of Standards and Technology (NIST); International Code Council (ICC); National Fire Protection Association (NFPA); U.S. Access Board and International Association of Fire Fighters (IAFF). March 2-4, 2004, Atlanta, GA, Guide on Methods for Evaluating Potential for Room Flashover, NFPA 555 2000 ed., Nat Fire Prot Assn, Quincy, MA.
- Bukowski, R. W., Is There A Need to Enclose Elevator Lobbies In Tall Buildings?, *Building Safety Journal*, 26-31 pp, August 2005.

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

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

FS55-07/08

707.14.1

Proponent: Sarah A. Rice, CBO, Schirmer Engineering Corporation

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. In other than Group I-2 and I-3, enclosed elevator lobbies are not required where the corridor(s) has a fire resistance rating and the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
- ~~6.~~ 6 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.
- ~~7.~~ 7 Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: The proposed exception is based upon recent work conducted by the ICC Code Technology Committee's, Balanced Fire Protection Features Study Group (CTC BFPF). During the last year the Study Groups investigated many of the fire safety related areas in the building code, including the concept of compartmentation. The SG looked at what added level of protection compartmentation (fire rated and nonfire-rated) would provide to occupants in a fire incident. While the SG is still many areas, it was generally agreed that there is data to indicate that compartmenting a floor within a building may add a heightened level of protection by inhibiting the rapid spread of a fire incident.

The intent of the rated lobby is to protect against the uncontrolled spread of smoke via the elevator shaft. As the majority of fires (and thus smoke) start within a room or space, not in a corridor, a fire rated corridors should be recognized as already provide this level of compartmentation as it will keep much of the smoke within the compartment. A rated elevator lobby on floors that already provide a barrier to prevent this is redundant. Add to the compartmentation a sprinkler system and the level of protection is further heightened.

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

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

FS56-07/08

707.14.1

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

Revise as follows:

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

Exceptions:

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

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

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

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

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

FS57-07/08

707.14.1

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

Revise as follows:

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

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

Exceptions:

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

Reason: We're proposing this code change because of our concerns about the application of Exception 6 which allows the elimination of enclosed elevator lobbies where the elevator hoistway is pressurized in accordance with the provisions in Section 707.14.2. Although we did not have a similar exception to the requirements in our legacy code, the ICBO Uniform Building Code (UBC), which we have been enforcing until very recently, we have certainly been exposed to many alternate methods for code compliance utilizing elevator hoistway pressurization in lieu of the elevator lobby enclosure requirement of the UBC. Our experience has indicated that each project is unique and requires an engineering evaluation to determine the appropriate measures that need to be taken to assure that the elevator hoistway pressurization system will work effectively and not cause other problems such as significantly increasing the resistance to the operation of the elevator hoistway doors or the movement of elevators in the hoistway as a result of the piston effect.

Therefore, we have added the words "Where approved" to the beginning of Exception 6 which then means that when this exception is applied, it must be evaluated on a case by case basis and subsequently approved by the code enforcement official. It is our understanding that the current provisions in Section 707.14.2 are based on local code amendment adopted by the city of Portland, OR which allows for elevator hoistway pressurization in lieu of elevator lobbies which they have had in effect for some time. We acknowledge that those criteria may have worked well in Portland but that does not mean that they will work well elsewhere throughout the country and even in California. We know that such conditions as outdoor air temperature, stack effect, and wind can cause pressure differentials within the building to change over time and by location within the building, as well as by the pressure difference that may result between the pressure in the elevator hoistway and the pressure in the building versus the outside air pressure. The multiplicity of design considerations make it quite difficult to engineer an elevator hoistway pressurization system that will function under any weather conditions at any time of the year regardless of the outside temperature.

Because of our experience in California, the California State Fire Marshal incorporated this very amendment into our state adoption of the 2006 International Building Code (IBC). Since this exception will most likely be applied to nonsprinklered mid-rise buildings and to sprinklered high-rise buildings, there will be a significant difference in the buoyancy effects of the smoke and the stack effects which require specific analysis on a case by case basis. Therefore, we believe this code change should be approved in order to allow the enforcing authority the ability to specifically approve the application of Exception 6.

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

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

FS58-07/08
707.14.1

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

Revise as follows:

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

Exceptions:

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

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

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

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

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

FS59–07/08

707.14.1

Proponent: Thomas Kinsman, T. A. Kinsman Consulting Company, representing himself

Revise as follows:

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

Exceptions:

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

7. Enclosed elevator lobbies are not required where the elevator opens to an exterior exit balcony or similar space open to the exterior.

Reason: The purpose of the code change is to permit elevators without lobbies where elevators open into exterior conditions. The intent of this section in the code is to restrict the migration of smoke between floors via the elevator shaft. In cases where the elevator opens to exterior condition gravity effect is reduced and smoke will directly vent to the outside. To provide a lobby in such a situation is wasteful with no real benefit to the intent of the section.

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

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

FS60–07/08

707.14.1, 707.14.1.1 (New)

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

Add new text as follows:

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

Exceptions:

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

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

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

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

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

06/07 Cycle: FS51 through FS54

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FS51–06/07

707.14.1

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

Revise as follows:

707.14.1 Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Where other provisions of the Code do not require corridors to be fire-resistive, elevator lobbies shall be constructed as smoke partitions in accordance with Section 710, to provide an effective barrier to limit the transfer of smoke. Elevator lobbies shall have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

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

Reason: Lobbies served by corridors not required to be fire-resistance rated should meet the requirements for smoke partitions. Several High-rise occupancies will not require fire-resistance rated corridors. Section 1017.1 and Table 1017.1 also have conditions that do not require corridors to have a fire-resistance rating. The primary reason for lobby enclosures is to limit or prevent vertical smoke spread through elevator shafts. Lobby enclosures, which do not have a fire-resistance rating due to sprinklers or other considerations in the Code, should provide a barrier to limit the spread of smoke. Historically elevator shafts have provided an avenue for smoke spread in building fires resulting in loss of life. Lobby protection in accordance with Section 710 is therefore appropriate for lobbies. Under the IBC many lobbies will open into non-rated corridors.

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

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

FS52–06/07

707.14.1

Proponent: Bill Ziegert, Smoke Guard, division of RectorSeal

Revise as follows:

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

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

Exceptions:

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

Reason: The purpose of the elevator lobby is to prevent smoke migration between floors. This change would clarify that elevator shaft smoke protection is required in I-2 occupancies. Patients in hospitals and nursing homes are the least likely of building occupants to be able to provide self directed evacuation in a fire emergency. Currently the code requires the establishment of at least 2 smoke compartments on each floor which allows patients to be relocated to another area of the floor on the other side of the smoke barrier construction, however the elevator shaft penetrates the floor assemblies and the elevator hoistway doors allow excessive amounts of smoke to leak into the elevator shaft and then to other floors when the hoistway opening is not protected. Many states and local jurisdictions already enforce a requirement such as this based upon either protection of entrances into corridors from smoke migration or alternately the requirement that the smoke compartments must seal all openings (vertical and horizontal) against the movement of smoke. Adding the proposed language to Exception 4 would insure uniform enforcement.

Cost Impact: The code change proposal will increase the cost of construction. There may be a cost increase in those jurisdictions not requiring this level of protection in I-2 occupancies now, however there is no cost increase for those jurisdictions already enforcing this requirement based upon other language in the IBC.

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

FS53-06/07
707.14.1

Proponent: Matthew Davy, Schirmer Engineering Corporation, Greenbelt, MD

Revise as follows:

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

Exceptions:

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

5. Smoke partitions shall be permitted in lieu of fire partitions to separate the elevator lobby at each floor where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
6. Enclosed elevator lobbies are not required 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 and the fire areas served by the elevator shaft enclosure are required by this code to comply with Section 903.3.2.
- ~~6- 7.~~ Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: The purpose of the proposed code change is to add a new exception that allows an elevator lobby to be open to a floor if the building is fully sprinklered and the fire areas served by the elevator shaft enclosure are required to be provided with quick-response or residential sprinkler heads.

It has been well established and stated in the IBC Commentary that “elevator shafts create a passage for the accumulation and spread of hot smoke and gases from a fire to upper stories of a building via stack effect. During a fire, the presence of stack effect generally results in the movement of smoke and combustion products from lower levels to upper levels through shafts in the building.” However, as also stated in the IBC Commentary, “the potential for smoke migration via the stack effect is reduced by a sprinkler system.” Therefore, a sprinkler system, coupled with quick-response or residential sprinklers, creates a scenario where smoke movement is not a significant problem that results in an untenable situation.

The IBC Commentary for Section 903.3.2 states that this section “requires the use of either listed quick-response or residential automatic sprinklers depending upon the type of sprinkler system required to facilitate faster and more effective suppression in certain areas. Residential sprinklers are required in all types of residential buildings that would permit the use of an NFPA 13R sprinkler system.”

Light Hazard occupancies as defined in NFPA 13 “shall be defined as occupancies or portions of other occupancies where the quantity and/or combustibility of contents is low and fires with relatively low rates of heat release are expected.” Light hazard occupancies include occupancies having uses and conditions similar to the following:

- Churches (IBC Group A-3)
- Clubs (IBC Group A-2)
- Educational (IBC Group E)
- Hospitals (IBC Group I-2)
- Institutional (IBC Group I-3)
- Libraries, except large stack rooms (IBC Group A-3)
- Museums (IBC Group A-3)
- Nursing or convalescent homes (IBC Group I-1)
- Offices, including data processing (IBC Group B)
- Residential (IBC Group R)
- Restaurant seating areas (IBC Group A-3)
- Theaters and auditoriums, excluding stages and prosceniums (IBC Group A-1)

Therefore, it can be realistically assumed that the light hazard occupancy includes Group A, B, E, I and R occupancies.

In the article by Bukowski, he indicates “as expected, sprinklered fires were not shown to represent a significant hazard to occupants because the sprinklers activated and extinguished the fires before they could release significant energy or mass. Little or no smoke or gasses entered the hoistways, and none reached remote locations in any building regardless of height or other conditions examined.” Later, Bukowski clearly states “it may be concluded [] that enclosed elevator lobbies are not necessary in building with operational fire sprinkler systems.”

The new installation of an automatic sprinkler system is required by IBC Section 903.4 to be monitored at all valves and water-flow switches and have audible alarms located on the exterior of the building. Overall, the fire protection system requirements for buildings constructed using the IBC have evolved and provide a holistic protection scheme. Therefore, this proposed code change proposal will reduce the conservative elevator lobby requirements by acknowledging the installation and effectiveness of automatic sprinkler systems in light hazard occupancies.

Bibliography:

Bukowski, R.W., *Is There A Need to Enclose Elevator Lobbies In Tall Buildings?*, Building Safety Journal, pg. 26-31, August 2005.

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

Analysis: A copy of the article *Is There A Need to Enclose Elevator Lobbies in Tall Buildings?* is available for review at <http://www.iccsafe.org/news/bsj>

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

FS54-06/07

707.14.1

Proponent: Dave Frable, U.S. General Services Administration, representing U.S. General Services Administration

Revise as follows:

707.14.1 Elevator lobby. An enclosed elevator lobby shall be provided at each floor where an elevator shaft enclosure connects more than three stories. The lobby shall separate the elevator shaft enclosure doors from each floor by fire partitions equal to the fire-resistance rating of the corridor and the required opening protection. Elevator lobbies shall

have at least one means of egress complying with Chapter 10 and other provisions within this code.

Exceptions:

1. Enclosed elevator lobbies are not required at the street floor, provided the entire street floor is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Elevators not required to be located in a shaft in accordance with Section 707.2 are not required to have enclosed elevator lobbies.
3. Where additional doors are provided at the hoistway opening in accordance with Section 3002.6. Such doors shall be tested in accordance with UL 1784 without an artificial bottom seal.
4. In other than Group I-3, and buildings having occupied floors located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, enclosed elevator lobbies are not required where the building is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
5. Enclosed elevator lobbies are not required to be installed in Group B occupancies that are more than 75 feet in height above the lowest level of fire department vehicle access, and are protected throughout by an automatic fire sprinkler system designed and installed in accordance with Section 903.3.1.1 and maintained in accordance with Section 903.5.
5. 6. 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. 7. Enclosed elevator lobbies are not required where the elevator hoistway is pressurized in accordance with Section 707.14.2.

Reason: The purpose of this code change is to acknowledge that Group B occupancies protected by an operational automatic fire sprinkler system provide an acceptable level of safety for building occupants and therefore do not warrant the need for enclosed elevator lobbies.

Previous research conducted by the National Institute of Standards and Technology (NIST) with consultation by Dr. John Klote, has shown that sprinklered fires do not represent a significant hazard to the building occupants because the automatic sprinklers activated and extinguished the fire prior to releasing a significant energy or mass. Little or no smoke or gases entered the hoistways, and none reached remote locations in any building regardless of height or other conditions examined.

Therefore, it can be concluded that smoke spread in shafts and elevator hoistways is not a problem in Group B occupancies protected throughout with an operational fire sprinkler system since the fire sprinklers both control the burning rate (and thus limit smoke production) and maintain near ambient temperature which limits the buoyancy forces that drive smoke to the shafts where stack effect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires². This conclusion can also be substantiated from a paper presented by Dr. John Klote at the Elevator Symposium on Emergency Use of Elevators in March 2004 and in an article titled "Is There A Need to Enclose Elevator Lobbies In Tall Buildings?", written by Richard Bukowski in the August 2005 *Building Safety Journal*.

In addition, all high-rise fires where smoke spread has been a problem have either been in unsprinklered buildings or partially sprinklered buildings. A recent comprehensive analysis in 2005 of high-rise fires by NFPA identified that no fatalities had occurred for more than a decade in any U.S. high-rise occupancy (> 10 story) other than the 6 fatalities in the unsprinklered Cook County Office Building (2003); the 1 fatality in the unsprinklered First Interstate Bank Building (1991); and 3 firefighter fatalities in the partially sprinklered (unsprinklered on floor of fire origin and several floors above) Meridian Plaza Building (1991). The Murrah Federal Building (1995) and the World Trade Center (1993 & 2001) bombings were excluded from this analysis.

The recently issued NFPA 2005 report on sprinkler reliability also indicated that automatic fire sprinklers successfully operating in reported structural fires was an exemplary 93%. In addition, NFPA also reported that two-thirds of the reported automatic fire sprinkler system failures were because the automatic fire sprinkler systems were shut off.⁴ Since the IBC requires the supervision of the automatic fire sprinkler system, one can conclude that the successful operation of an automatic fire sprinkler system designed and installed in compliance with the IBC requirements could be reasonably estimated at 98%. NFPA also reported that the percentage of successfully operating automatic fire sprinkler systems is probably higher since a large percentage of small fire extinguished by fire sprinklers are not reported. Therefore, for an automatic fire sprinkler system designed and installed in accordance with the IBC requirements, the successful operation of an automatic fire sprinkler system could be reasonably estimated at 98% or more.

Please also keep in mind that the purpose of the International Building Code is to provide minimum requirements to safeguard occupants of buildings from fire and other hazards attributed to the built environment that are based on sound technical documentation. Also keep in mind that fatalities are very rare in office buildings, even rarer in high-rise office buildings, and surpassingly rare in high-rise office buildings protected with an operational fire sprinkler system.

Last but not least, it should be noted that a similar proposal regarding the enclosure of elevator lobbies was also addressed by the National Fire Protection Association (NFPA) 101 Technical Committee on Industrial, Storage, and Miscellaneous (e.g., High-rise) Occupancies. The NFPA Technical Committee did not approve the proposal to separate elevator hoistways with smoke barriers in sprinkler high-rise buildings based on a lack of technical substantiation. In addition, on June 9, 2005 the NFPA membership approved the 2006 edition of NFPA 101 and supported the Technical Committee's decision to not include a requirement to separate elevator hoistways with smoke barriers in sprinkler high-rise buildings.

Based on all these points stated above, we strongly believe that it unreasonable to state that Group B occupancies protected throughout with automatic fire sprinkler system is not a rationale alternative to enclosed elevator lobbies and that automatic fire sprinklers are not an effective method for slowing or stopping the spread of smoke throughout a building protected throughout with an operational automatic fire sprinkler system. In addition, we believe the current requirement for enclosing elevator lobbies in Group B occupancies, protected throughout by an operational automatic fire sprinkler system has not been based on sound technical documentation and will significantly increase building construction and maintenance costs without increasing the overall safety to the building occupants.

References:

Klote, J.H., Analysis of the Consequences of Smoke Migration through Elevator Shafts, Use of Elevators in Fires and Other Emergencies Workshop. Proceedings. Co-Sponsored by American Society of Mechanical Engineers (ASME International); National Institute of Standards and Technology (NIST); International Code Council (ICC); National Fire Protection Association (NFPA); U.S. Access Board and International Association of Fire Fighters (IAFF). March 2-4, 2004, Atlanta, GA,
Guide on Methods for Evaluating Potential for Room Flashover, NFPA 555 2000 ed., Nat Fire Prot Assn, Quincy, MA.

Bukowski, R. W., Is There A Need to Enclose Elevator Lobbies In Tall Buildings?, Building Safety Journal, 26-31 pp, August 2005.
Rohr, K.D and Hall, J.R., Jr., U.S. Experience With Sprinklers and Other Fire Extinguishing Equipment, August 2005.

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

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