INTERNATIONAL CODE COUNCIL
2009/2010 CODE DEVELOPMENT CYCLE

PROPOSED CHANGES TO THE 2009 EDITIONS OF THE

INTERNATIONAL BUILDING CODE®

INTERNATIONAL ENERGY CONSERVATION CODE®

INTERNATIONAL EXISTING BUILDING CODE®

INTERNATIONAL FIRE CODE®

INTERNATIONAL FUEL GAS CODE®

INTERNATIONAL MECHANICAL CODE®

INTERNATIONAL PLUMBING CODE®

INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE®

INTERNATIONAL PROPERTY MAINTENANCE CODE®

INTERNATIONAL RESIDENTIAL CODE®

INTERNATIONAL WILDLAND-URBAN INTERFACE CODE®

INTERNATIONAL ZONING CODE®

October 24 2009 – November 11, 2009

Hilton Baltimore
Baltimore, MD

First Printing

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INTRODUCTION

The proposed changes published herein have been submitted in accordance with established procedures and are distributed for review. The publication of these changes constitutes neither endorsement nor question of them but is in accordance with established procedures so that any interested individuals may make their views known to the relevant code committee and others similarly interested. In furtherance of this purpose, the committee will hold an open public hearing at the date and place shown below for the purpose of receiving comments and arguments for or against such proposed changes. Those who are interested in testifying on any of the published changes are expected to be represented at these hearings.

This compilation of code change proposals is available in electronic form only. As part of ICC's green initiative, ICC will no longer print and distribute this document. The compilation of code change proposals will be posted on the ICC website, and CD copies will be distributed to all interested parties on our list.

2009 ICC CODE DEVELOPMENT HEARINGS

These proposed changes will be discussed in public hearings to be held on October 24, 2009 through October 31, 2009 and November 4-11, 2009 at the Hilton Baltimore, Baltimore, Maryland. The code committees will conduct their public hearings in accordance with the schedule shown on page xxxii.

REGISTRATION AND VOTING

All members of ICC may vote on any assembly motion on proposed code changes to all International Codes. **For identification purposes, eligible voting members must register, at no cost, in order to vote.** The registration desk will be open in the lobby of the convention center according to the following schedule:

Friday, October 23rd	3:00 pm to 6:00 pm
Saturday, October 24th through Wednesday November 11th	7:30 am to 5:00 pm

Council Policy #28-Code Development (page xii) requires that ICC's membership records regarding ICC members reflect the eligible voters 10 days prior to the start of the Code Development Hearings. This process includes new as well as changes to voting status. Section 5.7.4 of CP #28 (page xix) reads as follows:

> **5.7.4 Eligible Voters:** All members of ICC in attendance at the public hearing shall be eligible to vote on floor motions. Only one vote authorized for each eligible attendee. Code Development Committee member shall be eligible to vote on floor motions. Application, whether new or updated, for ICC membership must be received by the Code Council ten days prior to the commencement of the first day of the public hearing.

As such, new membership application as well as renewal applications must be received by ICC's Member Services Department by October 14, 2009. These records will be used to verify eligible voter status for the Code Development Hearings. Members are strongly encouraged to review their membership records for accuracy well in advance of the hearings so that any necessary changes are made prior to the October 14, 2009 deadline. For information on application for new membership and membership renewal, please go to www.iccsafe.org/membership/join.html or call ICC Member Services at 1-888-ICC SAFE (422-7233)

It should be noted that a corporate member has a single vote. Only one representative of a corporate member will be issued a voting badge. ICC Staff will be contacting corporate members regarding who the designated voting representative will be.

ADVANCED REGISTRATION

You are encouraged to advance register by filling out the registration form available at www.iccsafe.org/codesforum.

CODE DEVELOPMENT PROCESS CHANGES

As noted in the posted Advisory Statement of February 4, 2009, the revised Code Development Process includes maintaining the current 3-year publication cycle with a single cycle of code development between code editions. The schedule for the 2009/2010 Code Development Cycle is the transitional schedule for the revised code development process. As noted, there will be two Final Action Hearings in 2010—one for the modified Group A, and one for the modified Group B. The codes that will comprise the Group A and Group B hearings will be announced prior to the Code Development Hearings in Baltimore. See the Code Development Process Notes included with the Schedule on page viii.

PROCEDURES

The procedures for the conduct of the public hearing are published in *Council Policy #28-Code Development (CP#28)* ("Procedures") on page xii. The attention of interested parties is specifically directed to Section 5.0 of the Procedures. These procedures indicate the conduct of, and opportunity to participate in the ICC Code Development Process. Please review these procedures carefully to familiarize yourself with the process.

There have been a number of revisions to the procedures. Included among these revisions are the following:

Section 2.3: **Supplements:** ICC will no longer produce a Supplement to each edition of the I-Codes. A new edition of the I-Codes will be based upon activity of a single code change cycle.

Section 3.3.3: **Multiple code change proposals:** A proponent is not permitted to submit multiple code changes to one section of a code unless the subject matter of each proposal is different.

Section 4.5.1: **Administrative update of standards:** Updating of standards without a change to code text (administrative update) shall be a code change proposal dealt with by the Administrative Code Development Committee. The updating of standards procedures have also changed. See discussion on updating of standards on page vi.

Section 4.7: **Code change posting:** All code change proposals are required to be posted on the ICC website 30 days before the code development hearings. Published copies will not be provided.

Section 5.2.2: **Conflict of interest:** Clarification is added that a committee member who steps down from the dais because of a conflict of interest is allowed to provide testimony from the floor on that code change proposal.

Section 5.4.6.2: **Proponent rebuttal testimony:** Where the code change proposal is submitted by multiple proponents, only one proponent of the joint submittal to be allotted additional time for rebuttal.

Section 5.5.2: **Modifications:** The chair rules a modification in or out of order. The chair's decision is final. No challenge in a point of order is allowed for this ruling.

Section 5.7.3: **Assembly Actions:** Several changes have been made to assembly actions. See explanation page v

Section 7.3.8.2: **Initial motion at final action hearings:** A successful assembly action becomes the initial motion at the final action hearings. See explanation page v.

ASSEMBLY ACTION

The procedures regarding assembly action at the Code Development Hearings have been revised to place more weight on the results of that action (see Section 5.7 of CP #28 on page viii). Some important items to note regarding assembly action are:

- A successful assembly action now requires a 2/3 majority rather than a simple majority.
- After the committee decision on a code change proposal is announced by the moderator, any one in the assembly may make a motion for assembly action.
- After a motion for assembly action is made and seconded, the moderator calls for a floor vote in accordance with Section 5.7.2. *No additional testimony will be permitted.*
- A successful assembly action becomes the initial motion considered at the Final Action Hearings. This also means that the required vote at the Final Action Hearings to uphold the assembly action is a simple majority.

MULTIPLE PART CODE CHANGE PROPOSALS

It is common for ICC to receive code change proposals for more than one code or more than 1 part of a code that is the responsibility of more than one committee. For instance, a code change proposal could be proposing related changes to the text of IBC Chapter 4 (IBC-General), IBC Chapter 7 (IBC-Fire Safety), and the IFC Chapter 27 (IFC). When this occurs, a single committee will now hear all of the parts, unless one of the parts is a change to the IRC, in which case the respective IRC committee will hear that part separately.

ADMINISTRATIVE CODE DEVELOPMENT COMMITTEE

A new committee for the 2009/2010 Code Change Cycle and going forward is the Administrative Code Development Committee. This committee will hear code change proposals to the administrative provisions of the I-Codes (Chapter 1 of each code.) The purpose of this committee is to achieve, inasmuch as possible, uniformity in the administrative provisions of all I-Codes when such uniformity is warranted.

ANALYSIS STATEMENTS

Various proposed changes published herein contain an “analysis” that appears after the proponent’s reason. These comments do not advocate action by the code committees or the voting membership for or against a proposal. The purpose of such comments is to identify pertinent information that is relevant to the consideration of the proposed change by all interested parties, including those testifying, the code committees and the voting membership. Staff analyses customarily identify such things as: conflicts and duplication within a proposed change and with other proposed changes and/or current code text; deficiencies in proposed text and/or substantiation; text problems such as wording defects and vagueness; background information on the development of current text; and staff’s review of proposed reference standards for compliance with the Procedures. Lack of an analysis indicates neither support for, nor opposition to a proposal.

REFERENCE STANDARDS

Proposed changes that include the addition of a reference to a new standard (i.e. a standard that is not currently referenced in the I-Codes.) will include in the proposal the number, title and edition of the proposed standard. This identifies to all interested parties the precise document that is being proposed and which would be included in the referenced standards chapter of the code if the proposed change is approved. Proponents of code changes which propose a new standard have been directed to forward copies of the standard to the Code Committee and an analysis statement will be posted on the ICC website indication the status of compliance of the standard with the ICC referenced standards criteria in Section 3.6 of CP #28 (see page xiv). (See the ICC Website page xi) The analysis statements for referenced standards will be posted on or before September 24, 2009. This information will also be published and made available at the hearings.

REFERENCED STANDARDS UPDATES

At the end of the agenda of the Administrative Code Development Committee is a code change proposal that is an administrative update of the referenced standards contained in the I-Codes. This code change proposal, ADM39-09/10 contains a list of standards for which the respective promulgators have indicated that the standard has been updated. The codes that these standards appear in are indicated beside each listed referenced standard. This update will then apply to every code in which the standard appears.

It should be noted that in accordance with Section 4.5.1 of CP #28 (see page xvi), standards promulgators have until December 1, 2011 to finalize and publish any updates to standards in the administrative update. If the standard is not finalized by December 1, 2011, the code will be revised to reference the previously listed year edition of that standard.

MODIFICATIONS

Those who are submitting modification for consideration by the respective Code Development Committee are required to submit a Copyright Release in order to have their modifications considered (Section 3.3.4.5 of CP #28). It is preferred that such release be executed in advance – the form is at http://www.iccsafe.org/cs/codes/publicforms.htm. Copyright release forms will also be available at the hearings. Please note that an individual need only sign one copyright release for submittals of all code change proposals, modification, and public comments in this code change cycle for which the individual might be responsible. **Please be sure to review Section 5.5.2 of CP #28 for the modification process.** The Chair of the respective code development committee rules a modification in or out of order. That ruling is final, with no challenge allowed. The proponent submitting a modification is required to supply 20 printed copies. The minimum font size must be 12 point.

CODE CORRELATION COMMITTEE

In every code change cycle, there are code change proposals that are strictly editorial. The Code Correlation Committee approves all proposals deemed editorial. A list of code correlation committee actions will be posted on the ICC website by September 24, 2009.

2009/2010 ICC CODE DEVELOPMENT SCHEDULE

STEP IN CODE DEVELOPMENT CYCLE	DATE
DEADLINE FOR RECEIPT OF APPLICATIONS FOR CODE COMMITTEES	January 2, 2009
DEADLINE FOR RECEIPT OF CODE CHANGE PROPOSALS	June 1, 2009
WEB POSTING OF "PROPOSED CHANGES TO THE I-CODES"	August 24, 2009
DISTRIBUTION DATE OF "PROPOSED CHANGES TO THE I-CODES" (Limited distribution – see notes)	October 3, 2009
CODE DEVELOPMENT HEARING (CDH) ALL CODES – see notes	**October 24 2009 – November 11, 2009** Hilton Baltimore Baltimore, MD
WEB POSTING OF "REPORT OF THE PUBLIC HEARING"	December 16, 2009
DISTRIBUTION DATE OF "REPORT OF THE PUBLIC HEARING" (Limited distribution – see notes)	January 11, 2010

IN ACCORDANCE WITH THE NEW CODE DEVELOPMENT PROCESS (see notes), THE CODES WILL BE SPLIT INTO TWO GROUPS WITH SEPARATE PUBLIC COMMENT DEADLINES AND FINAL ACTION HEARINGS

	GROUP A (see notes)	GROUP B (see notes)
DEADLINE FOR RECEIPT OF PUBLIC COMMENTS	February 8, 2010	July 1, 2010
WEB POSTING OF PUBLIC COMMENTS "FINAL ACTION AGENDA"	March 15, 2010	August 26, 2010
DISTRIBUTION DATE OF PUBLIC COMMENTS "FINAL ACTION AGENDA" (Limited distribution see notes)	April 16, 2010	September 27, 2010
FINAL ACTION HEARINGS (FAH)	**May 14 – 23, 2010** Dallas, TX	**Oct 28 – Nov 1, 1020** Charlotte, NC
ANNUAL CONFERENCES	**<u>October 24 – November 11, 2009</u>** 2009 ICC Annual Conference and Code Development Hearing Balitmore, MD **<u>October 25 – November 1, 2010</u>** 2010 ICC Annual Conference and Final Action Hearing Charlotte, NC	
RESULTING PUBLICATION	2012 – I-Codes (available April, 2011)	

Code Development Process Notes:

As noted in the posted Advisory Statement of February 4, 2009, the revised Code Development Process includes maintaining the current 3-year publication cycle with a single cycle of code development between code editions. Implemented as follows:

- Transitional Process – 2009/2010 only
    - Single Code Development Hearing (CDH) for all codes in 2009
    - Two Final Action Hearings (FAH) in 2010 – modified Groups A and B (see below)
    - Public 2012 edition in April, 2011
- New Process – 2012/2013 and going forward
    - Code Committee application deadline (all codes); June 1, 2011
    - Codes split into two groups: Group A and Group B
    - Group A: IBC; IFGC; IMC; IPC; IPSDC
        - Code change deadline: January 3, 2012
        - Code Development Hearing: April/May 2012
        - Final Action Hearing: October/November 2012 (in conjunction with Annual Conference)
    - Group B: Admin (Ch. 1 of I-Codes); IEBC; IECC; IFC; IPerfC; IPMC; IRC; IWUIC; IZC
        - Code change deadline: January 3, 2013
        - Code Development Hearing: April/May 2013
        - Final Action Hearing: October/November 2013 (in conjunction with Annual Conference)
    - Publish 2015 edition in April, 2014
    - Repeat for subsequent editions

2009/2010 Cycle Notes:

- Revised code change deadline of June 1st posted on March 19th

- Distribution date: Complimentary code development cycle document distribution will be limited to CD's mailed to those who are on ICC's code change document mailing list.

- Code Development Hearings: The Baltimore Code Development Hearings will include 12 I-Codes (no changes to the ICC Performance Code. The hearings will be held in the conventional two track format with the hearings split before and after the Annual Conference during the periods of October 24 – 31 and November 4 – 11. The specific codes and hearing order to be determined based on code change volume.

- Final Action Hearing Groupings: Final Action Hearing logistics dictate that the hearings will not be split along established Group A and B codes (see above) due to hotel commitments which limit the amount of hearing time at the October/2010 FAH versus the May/2010 FAH. Tentatively, the May/2010 FAH will include Group A codes plus certain Group B codes to be determined based on code change volume.

2009/2010 STAFF SECRETARIES

IBC-General Chapters 1-6. 12, 13, 27-34	IBC-Fire Safety Chapters 7, 8, 9, 14, 26	IBC-Means of Egress Chapters 10, 11	IBC-Structural Chapters 15-25
Kermit Robinson ICC Whittier District Office 1-888-ICC-SAFE, ext. 3317 FAX: 562/699-4522 krobinson@iccsafe.org	Ed Wirtschoreck ICC Chicago District Office 1-888-ICC-SAFE, ext 4317 FAX: 708/799-0320 ewirtschoreck@iccsafe.org	Kim Paarlberg ICC Indianapolis Field Office 1-888-ICC-SAFE, ext 4306 FAX: 708/799-0320 kpearlberg@iccsafe.org	Alan Carr ICC NW Resource Center 1-888-ICC-SAFE, ext 7601 FAX: 425/637-8939 acarr@iccsafe.org

IEBC	IECC	IFC	IFGC
BethTubbs ICC Northbridge Field Office 1-888-ICC-SAFE, ext 7708 FAX: 419/ 730-6531 btubbs@iccsafe.org	Dave Bowman ICC Chicago District Office 1-888-ICC-SAFE, ext 4323 FAX: 708/799-0320 dmeyers@iccsafe.org	Bill Rehr/ Beth Tubbs ICC Chicago District Office 1-888-ICC-SAFE, ext 4342 FAX: 708/799-0320 brehr@iccsafe.org btubbs@iccsafe.org	Gregg Gress ICC Chicago District Office 1-888-ICC-SAFE, ext 4343 FAX: 708/799-0320 ggress@iccsafe.org

IMC	ICC PC	IPMC	IPC/IPSDC
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IRC-Building/Energy	IRC Mechanical	IRC Plumbing	IWUIC
Larry Franks/ Dave Bowman ICC Northbridge Field Office 1-888-ICC-SAFE, ext 5279 FAX: 205/592-7001 lfranks@iccsafe.org dbowman@iccsafe.org	Gregg Gress ICC Chicago District Office 1-888-ICC-SAFE, ext 4343 FAX: 708/799-0320 ggress@iccsafe.org	Fred Grable ICC Chicago District Office 1-888-ICC-SAFE, ext 4359 FAX: 708/799-0320 fgrable@iccsafe.org	Bill Rehr ICC Chicago District Office 1-888-ICC-SAFE, ext 4342 FAX: 708/799-0320 brehr@iccsafe.org

IZC	ADMINISTRATIVE Chapter 1 All Codes Except IRC
Ed Wirtschoreck ICC Chicago District Office 1-888-ICC-SAFE, ext 4317 FAX: 708/799-0320 ewirtschoreck@iccsafe.org	Dave Bowman ICC Chicago District Office 1-888-ICC-SAFE, ext 4323 FAX: 708/799-0320 dbowman@iccsafe.org

SCOPING REVISIONS – WITHIN THE IBC

The 2009/2010 Staff Secretaries assignments on page ix indicate which chapters of the International Building Code are generally within the responsibility of each IBC Code Committee. However, within each of these IBC Chapters are subjects that are most appropriately maintained by another IBC Code Committee. For example, the provisions of Section 3008.1 deal with occupant evacuation elevators. Therefore, even though Chapter 30 is within the responsibility of the IBC General Committee, this section would most appropriately be maintained by the IBC Means of Egress Committee. The following table indicates responsibilities by IBC Code Committees other than the main committee for those chapters, for code changes submitted for the 2009/2010 Cycle.

SECTION	CHAPTER MAINTAINED BY	SECTION MAINTAINED BY	CODE CHANGES
403.2.3	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
403.5.1	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
403.5.2	IBC-General	IBC-Means of Egress	G46
403.5.4	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
403.5.4	IBC-General	IBC-Means of Egress	G47
403.6.1	IBC-General	IBC-Means of Egress	G48, G49
408.3.8	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
410.5.3.1	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
419.3.0	IBC-General	IBC-Means of Egress	G79
1505.1.0	IBC-Structural	IBC-Fire Safety	S10, S11
1505.8.0	IBC-Structural	IBC-Fire Safety	S12, S13
1507.16.0	IBC-Structural	IBC-Fire Safety	S10, S11
1508.1.0	IBC-Structural	IBC-Fire Safety	S24
1508.2.0	IBC-Structural	IBC-Fire Safety	S25
1509.0.0	IBC-Structural	IBC-General	S26, S27
1509.6.(new)	IBC-Structural	IBC-General	S28
1704.15.0	IBC-Structural	IBC-Fire Safety	S126, S127,S128
3007.1.0	IBC-General	IBC-Means of Egress	G48,G157
3007.2.(new)	IBC-General	IBC-Means of Egress	G158, G159
3007.2.0	IBC-General	IBC-Means of Egress	G160
3007.3.(new)	IBC-General	IBC-Means of Egress	G158, G161
3007.4.(new)	IBC-General	IBC-Means of Egress	G162
3007.4.2	IBC-General	IBC-Means of Egress	G163
3007.4.3	IBC-General	IBC-Means of Egress	G176
3007.5.1.(NEW)	IBC-General	IBC-Means of Egress	G164
3007.7.1	IBC-General	IBC-Means of Egress	G165, G166
3007.8.0	IBC-General	IBC-Means of Egress	G167
3008.1.0	IBC-General	IBC-Means of Egress	G168, G170
3008.1.1	IBC-General	IBC-Means of Egress	G169
3008.10.0	IBC-General	IBC-Means of Egress	G174
3008.10.1	IBC-General	IBC-Means of Egress	G175
3008.11.3	IBC-General	IBC-Means of Egress	G176
3008.11.5	IBC-General	IBC-Means of Egress	G177
3008.3.(NEW)	IBC-General	IBC-Means of Egress	G165, G166
3008.4.(NEW)	IBC-General	IBC-Means of Egress	G171
3008.4.0	IBC-General	IBC-Means of Egress	G46
3008.7.0	IBC-General	IBC-Means of Egress	G172
3008.9.0	IBC-General	IBC-Means of Egress	G173
3401.4.0	IBC-General	IBC-Structural	G190
3401.4.1	IBC-General	IBC-Structural	G191
3401.4.3	IBC-General	IBC-Structural	G190
3401.5.(NEW)	IBC-General	IBC-Structural	G192

SECTION	CHAPTER MAINTAINED BY	SECTION MAINTAINED BY	CODE CHANGES
3402.1.0	IBC-General	IBC-Structural	G193
3403.4.1	IBC-General	IBC-Structural	G190
3404.4.1	IBC-General	IBC-Structural	G190
3405.1.1	IBC-General	IBC-Structural	G192
3405.2.0	IBC-General	IBC-Structural	G193, G194
3405.2.1	IBC-General	IBC-Structural	G193, G190
3405.2.2	IBC-General	IBC-Structural	G193
3405.2.3	IBC-General	IBC-Structural	G193, G195
3405.3.0	IBC-General	IBC-Structural	G193
3405.4.0	IBC-General	IBC-Structural	G193, G194
3405.5.0	IBC-General	IBC-Structural	G196
3408.4.0	IBC-General	IBC-Structural	G190, G197
3408.4.0	IBC-General	IBC-Structural	G190
403.2.3	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
403.5.1	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
403.5.2	IBC-General	IBC-Means of Egress	G46
403.5.4	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
403.5.4	IBC-General	IBC-Means of Egress	G47
403.6.1	IBC-General	IBC-Means of Egress	G48, G49
408.3.8	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
410.5.3.1	IBC-General	IBC-Structural	E5 Part I (Heard by IBC-MOE)
419.3.0	IBC-General	IBC-Means of Egress	G79

ICC WEBSITE – WWW.ICCSAFE.ORG

While great care has been exercised in the publication of this document, errata to proposed changes may occur. Errata, if any, identified prior to the Code Development Hearings will be posted on the ICC website at http://www.iccsafe.org. Users are encouraged to periodically review the ICC Website for updates to errata to the 2009/2010 Code Development Cycle Proposed Changes. Additionally, analysis statements for code changes which propose a new referenced standard will be updated to reflect the staff review of the standard for compliance with Section 3.6 of the Procedures.

CP# 28-05 CODE DEVELOPMENT

Approved: 9/24/05
Revised: 2/27/09

CP # 28-05 is an update to *ICC's Code Development Process for the International Codes* dated May 15, 2004.

1.0 Introduction

1.1 Purpose: The purpose of this Council Policy is to prescribe the Rules of Procedure utilized in the continued development and maintenance of the International Codes (Codes).

1.2 Objectives: The ICC Code Development Process has the following objectives:

1.2.1 The timely evaluation and recognition of technological developments pertaining to construction regulations.
1.2.2 The open discussion of proposals by all parties desiring to participate.
1.2.3 The final determination of Code text by officials representing code enforcement and regulatory agencies and by honorary members.

1.3 Code Publication: The ICC Board of Directors (ICC Board) shall determine the title and the general purpose and scope of each Code published by the ICC.

1.3.1 Code Correlation: The provisions of all Codes shall be consistent with one another so that conflicts between the Codes do not occur. Where a given subject matter or code text could appear in more than one Code, the ICC Board shall determine which Code shall be the primary document, and therefore which code development committee shall be responsible for review and maintenance of the code text. Duplication of content or text between Codes shall be limited to the minimum extent necessary for practical usability of the Codes, as determined in accordance with Section 4.4.

1.4 Process Maintenance: The review and maintenance of the Code Development Process and these Rules of Procedure shall be by the ICC Board. The manner in which ICC codes are developed embodies core principles of the organization. One of those principles is that the final content of ICC codes is determined by a majority vote of the governmental and honorary members. It is the policy of the Board that there shall be no change to this principle without the affirmation of two-thirds of the governmental and honorary members responding.

1.5 Secretariat: The Chief Executive Officer shall assign a Secretariat for each of the Codes. All correspondence relating to code change proposals and public comments shall be addressed to the Secretariat.

1.6 Video Taping: Individuals requesting permission to video tape any meeting, or portion thereof, shall be required to provide the ICC with a release of responsibility disclaimer and shall acknowledge that they have insurance coverage for liability and misuse of video tape materials. Equipment and the process used to video tape shall, in the judgment of the ICC Secretariat, be conducted in a manner that is not disruptive to the meeting. The ICC shall not be responsible for equipment, personnel or any other provision necessary to accomplish the videotaping. An unedited copy of the video tape shall be forwarded to ICC within 30 days of the meeting.

2.0 Code Development Cycle

2.1 Intent: The code development cycle shall consist of the complete consideration of code change proposals in accordance with the procedures herein specified, commencing with the deadline for submission of code change proposals (see Section 3.5) and ending with publication of final action on the code change proposals (see Section 7.6).

2.2 New Editions: The ICC Board shall determine the schedule for publishing new editions of the Codes. Each new edition shall incorporate the results of the code development activity since the last edition.

2.3 Supplements: The results of code development activity between editions may be published.

2.4 Emergency Procedures: In the event that the ICC Board determines that an emergency amendment to any Code is warranted, the same may be adopted by the ICC Board. Such action shall require an affirmative vote of at least two-thirds of the ICC Board.

The ICC membership shall be notified within ten days after the ICC Boards' official action of any emergency amendment. At the next Annual Business Meeting, any emergency amendment shall be presented to the members for ratification by a majority of the ICC Governmental Member Representatives and Honorary Members present and voting.

All code revisions pursuant to these emergency procedures and the reasons for such corrective action shall be published as soon as practicable after ICC Board action. Such revisions shall be identified as an emergency amendment.

Emergency amendments to any Code shall not be considered as a retro-active requirement to the Code. Incorporation of the emergency amendment into the adopted Code shall be subjected to the process established by the adopting authority.

3.0 Submittal of Code Change Proposals

3.1 Intent: Any interested person, persons or group may submit a code change proposal which will be duly considered when in conformance to these Rules of Procedure.

3.2 Withdrawal of Proposal: A code change proposal may be withdrawn by the proponent (WP) at any time prior to Final Action Consideration of that proposal. A withdrawn code change proposal shall not be subject to a public hearing, motions, or Final Action Consideration.

3.3 Form and Content of Code Change Submittals: Each code change proposal shall be submitted separately and shall be complete in itself. Each submittal shall contain the following information:

3.3.1 Proponent: Each code change proposal shall include the name, title, mailing address, telephone number, and email address of the proponent.

3.3.1.1 If a group, organization or committee submits a code change proposal, an individual with prime responsibility shall be indicated.

3.3.1.2 If a proponent submits a code change on behalf of a client, group, organization or committee, the name and mailing address of the client, group, organization or committee shall be indicated.

3.3.2 Code Reference: Each code change proposal shall relate to the applicable code sections(s) in the latest edition of the Code.

3.3.2.1 If more than one section in the Code is affected by a code change proposal, appropriate proposals shall be included for all such affected sections.

3.3.2.2 If more than one Code is affected by a code change proposal, appropriate proposals shall be included for all such affected Codes and appropriate cross referencing shall be included in the supporting information.

3.3.3 Multiple code change proposals to a code section. A proponent shall not submit multiple code change proposals to the same code section. When a proponent submits multiple code change proposals to the same section, the proposals shall be considered as incomplete proposals and processed in accordance with Section 4.3. This restriction shall not apply to code change proposals that attempt to address differing subject matter within a code section.

3.3.4 Text Presentation: The text proposal shall be presented in the specific wording desired with deletions shown struck out with a single line and additions shown underlined with a single line.

3.3.4.1 A charging statement shall indicate the referenced code section(s) and whether the proposal is intended to be an addition, a deletion or a revision to existing Code text.

3.3.4.2 Whenever practical, the existing wording of the text shall be preserved with only such deletions and additions as necessary to accomplish the desired change.

3.3.4.3 Each proposal shall be in proper code format and terminology.

3.3.4.4 Each proposal shall be complete and specific in the text to eliminate unnecessary confusion or misinterpretation.

3.3.4.5 The proposed text shall be in mandatory terms.

3.3.5 Supporting Information: Each code change proposal shall include sufficient supporting information to indicate how the proposal is intended to affect the intent and application of the Code.

3.3.5.1 Purpose: The proponent shall clearly state the purpose of the proposed code change (e.g. clarify the Code; revise outdated material; substitute new or revised material for current provisions of the Code; add new requirements to the Code; delete current requirements, etc.)

3.3.5.2 Reasons: The proponent shall justify changing the current Code provisions, stating why the proposal is superior to the current provisions of the Code. Proposals which add or delete requirements shall be supported by a logical explanation which clearly shows why the current Code provisions are inadequate or overly restrictive, specifies the shortcomings of the current Code provisions and explains how such proposals will improve the Code.

3.3.5.3 Substantiation: The proponent shall substantiate the proposed code change based on technical information and substantiation. Substantiation provided which is reviewed in accordance with Section 4.2 and determined as not germane to the technical issues addressed in the proposed code change shall be identified as such. The proponent shall be notified that the proposal is considered an incomplete proposal in accordance with Section 4.3 and the proposal shall be held until the deficiencies are corrected. The proponent shall have the right to appeal this action in accordance with the policy of the ICC Board. The burden of providing substantiating material lies with the proponent of the code change proposal.

3.3.5.4 Bibliography: The proponent shall submit a bibliography of any substantiating material submitted with the code change proposal. The bibliography shall be published with the code change and the proponent shall make the substantiating materials available for review at the appropriate ICC office and during the public hearing.

3.3.5.5 Copyright Release: The proponent of code change proposals, floor modifications and public comments shall sign a copyright release reading: “I hereby grant and assign to ICC all rights in copyright I may have in any authorship contributions I make to ICC in connection with any proposal and public comment, in its original form submitted or revised form, including written and verbal modifications submitted in accordance Section 5.5.2. I understand that I will have no rights in any ICC publications that use such contributions in the form submitted by me or another similar form and certify that such contributions are not protected by the copyright of any other person or entity.”

3.3.5.6 Cost Impact: The proponent shall indicate one of the following regarding the cost impact of the code change proposal: 1) the code change proposal will increase the cost of construction; or 2) the code change proposal will not increase the cost of construction. This information will be included in the published code change proposal.

3.4 Number: One copy of each code change proposal, two copies of each proposed new referenced standard and one copy of all substantiating information shall be submitted. Additional copies may be requested when determined necessary by the Secretariat to allow such information to be distributed to the code development committee. Where such additional copies are requested, it shall be the responsibility of the proponent to send such copies to the respective code development committee. A copy of the code change proposal in electronic form is preferred.

3.5 Submittal Deadline: Each code change proposal shall be received at the office of the Secretariat by the posted deadline. Such posting shall occur no later than 120 days prior to the code change deadline. The submitter of a proposed code change is responsible for the proper and timely receipt of all pertinent materials by the Secretariat.

3.6 Referenced Standards: In order for a standard to be considered for reference or to continue to be referenced by the Codes, a standard shall meet the following criteria:

3.6.1 Code References:

3.6.1.1 The standard, including title and date, and the manner in which it is to be utilized shall be specifically referenced in the Code text.
3.6.1.2 The need for the standard to be referenced shall be established.

3.6.2 Standard Content:

3.6.2.1 A standard or portions of a standard intended to be enforced shall be written in mandatory language.
3.6.2.2 The standard shall be appropriate for the subject covered.
3.6.2.3 All terms shall be defined when they deviate from an ordinarily accepted meaning or a dictionary definition.
3.6.2.4 The scope or application of a standard shall be clearly described.
3.6.2.5 The standard shall not have the effect of requiring proprietary materials.
3.6.2.6 The standard shall not prescribe a proprietary agency for quality control or testing.
3.6.2.7 The test standard shall describe, in detail, preparation of the test sample, sample selection or both.
3.6.2.8 The test standard shall prescribe the reporting format for the test results. The format shall identify the key performance criteria for the element(s) tested.
3.6.2.9 The measure of performance for which the test is conducted shall be clearly defined in either the test standard or in Code text.
3.6.2.10 The standard shall not state that its provisions shall govern whenever the referenced standard is in conflict with the requirements of the referencing Code.
3.6.2.11 The preface to the standard shall announce that the standard is promulgated according to a consensus procedure.

3.6.3 Standard Promulgation:

3.6.3.1 Code change proposals with corresponding changes to the code text which include a reference to a proposed new standard or a proposed update of an existing referenced shall comply with this section. The standard shall be completed and readily available prior to Final Action Consideration based on the cycle of code development which includes the proposed code change proposal. In order for a new standard to be considered for reference by the Code, such standard shall be submitted in at least a consensus draft form in accordance with Section 3.4. Updating of standards without corresponding code text changes shall be accomplished administratively in accordance with Section 4.5.
3.6.3.2 The standard shall be developed and maintained through a consensus process such as ASTM or ANSI.

4.0 Processing of Proposals

4.1 Intent: The processing of code change proposals is intended to ensure that each proposal complies with these Rules of Procedure and that the resulting published proposal accurately reflects that proponent's intent.

4.2 Review: Upon receipt in the Secretariat's office, the code change proposals will be checked for compliance with these Rules of Procedure as to division, separation, number of copies, form, language, terminology, supporting statements and substantiating data. Where a code change proposal consists of multiple parts which fall under the maintenance responsibilities of different code committees, the Secretariat shall determine the code committee responsible for determining the committee action in accordance with Section 5.6.

4.3 Incomplete Proposals: When a code change proposal is submitted with incorrect format, without the required information or judged as not in compliance with these Rules of Procedure, the Secretariat shall notify the proponent of the specific deficiencies and the proposal shall be held until the deficiencies are corrected, with a final date set for receipt of a corrected submittal. If the Secretariat receives the corrected proposal after the final date, the proposal shall be held over until the next code development cycle. Where there are otherwise no deficiencies addressed by this section, a proposal that incorporates a new referenced standard shall be processed with an analysis of referenced standard's compliance with the criteria set forth in Section 3.6.

4.4 Editorial: The Chief Executive Officer shall have the authority at all times to make editorial and format changes to the Code text, or any approved changes, consistent with the intent, provisions and style of the Code. An editorial or format change is a text change that does not affect the scope or application of the code requirements.

4.5 Updating Standards:

4.5.1 Standards referenced in the 2012 Edition of the I-Codes: The updating of standards referenced by the Codes shall be accomplished administratively by the Administrative code development committee in accordance with these full procedures except that the deadline for availability of the updated standard and receipt by the Secretariat shall be December 1, 2011. The published version of the 2012 Code which references the standard will refer to the updated edition of the standard. If the standard is not available by the deadline, the edition of the standard as referenced by the newly published Code shall revert back to the reference contained in the previous edition and an errata to the Code issued Multiple standards to be updated may be included in a single proposal.

4.5.2 Standards referenced in the 2015 Edition and following Editions of the I-Codes: The updating of standards referenced by the Codes shall be accomplished administratively by the Administrative code development committee in accordance with these full procedures except that multiple standards to be updated may be included in a single proposal. The standard shall be completed and readily available prior to Final Action Consideration of the Administrative code change proposal which includes the proposed update.

4.6 Preparation: All code change proposals in compliance with these procedures shall be prepared in a standard manner by the Secretariat and be assigned separate, distinct and consecutive numbers. The Secretariat shall coordinate related proposals submitted in accordance with Section 3.3.2 to facilitate the hearing process.

4.7 Publication: All code change proposals shall be posted on the ICC website at least 30 days prior to the public hearing on those proposals and shall constitute the agenda for the public hearing. Code change proposals which have not been published shall not be considered.

5.0 Public Hearing

5.1 Intent: The intent of the public hearing is to permit interested parties to present their views including the cost and benefits on the code change proposals on the published agenda. The code development committee will consider such comments as may be presented in the development of their action on the disposition of such proposals. At the conclusion of the code development committee deliberations, the committee action on each code change proposal shall be placed before the hearing assembly for consideration in accordance with Section 5.7.

5.2 Committee: The Code Development Committees shall be appointed by the applicable ICC Council.

5.2.1 Chairman/Moderator: The Chairman and Vice-Chairman shall be appointed by the Steering Committee on Councils from the appointed members of the committee. The ICC President shall appoint one or more Moderators who shall act as presiding officer for the public hearing.

5.2.2 Conflict of Interest: A committee member shall withdraw from and take no part in those matters with which the committee member has an undisclosed financial, business or property interest. The committee member shall not participate in any committee discussion on the matter or any committee vote. Violation thereof shall result in the immediate removal of the committee member from the committee. A committee member who is a proponent of a proposal shall not participate in any committee discussion on the matter or any committee vote. Such committee member shall be permitted to participate in the floor discussion in accordance with Section 5.5 by stepping down from the dais.

5.2.3 Representation of Interest: Committee members shall not represent themselves as official or unofficial representatives of the ICC except at regularly convened meetings of the committee.

5.2.4 Committee Composition: The committee may consist of representation from multiple interests. A minimum of thirty-three and one-third percent (33.3%) of the committee members shall be regulators.

5.3 Date and Location: The date and location of each public hearing shall be announced not less than 60 days prior to the date of the public hearing.

5.4 General Procedures: *The Robert's Rules of Order* shall be the formal procedure for the conduct of the public hearing except as a specific provision of these Rules of Procedure may otherwise dictate. A quorum shall consist of a majority of the voting members of the committee.

5.4.1 Chair Voting: The Chairman of the committee shall vote only when the vote cast will break a tie vote of the committee.

5.4.2 Open Meetings: Public hearings of the Code Development Committees are open meetings. ` Any interested person may attend and participate in the Floor Discussion and Assembly Consideration portions of the hearing. Only eligible voters (see Section 5.7.4) are permitted to vote on Assembly Considerations. Only Code Development Committee members may participate in the Committee Action portion of the hearings (see Section 5.6).

5.4.3 Presentation of Material at the Public Hearing: Information to be provided at the hearing shall be limited to verbal presentations and modifications submitted in accordance with Section 5.5.2. Audio-visual presentations are not permitted. Substantiating material submitted in accordance with Section 3.3.4.4 and other material submitted in response to a code change proposal shall be located in a designated area in the hearing room and shall not be distributed to the code development committee at the public hearing.

5.4.4 Agenda Order: The Secretariat shall publish an agenda for each public hearing, placing individual code change proposals in a logical order to facilitate the hearing. Any public hearing attendee may move to revise the agenda order as the first order of business at the public hearing, or at any time during the hearing except while another proposal is being discussed. Preference shall be given to grouping like subjects together, and for moving items back to a later position on the agenda as opposed to moving items forward to an earlier position. A motion to revise the agenda order is subject to a 2/3 vote of those present and voting.

5.4.5 Reconsideration: There shall be no reconsideration of a proposed code change after it has been voted on by the committee in accordance with Section 5.6; or, in the case of assembly consideration, there shall be no reconsideration of a proposed code change after it has been voted on by the assembly in accordance with Section 5.7.

5.4.6 Time Limits: Time limits shall be established as part of the agenda for testimony on all proposed changes at the beginning of each hearing session. Each person requesting to testify on a change shall be given equal time. In the interest of time and fairness to all hearing participants, the Moderator shall have limited authority to modify time limitations on debate. The Moderator shall have the authority to adjust time limits as necessary in order to complete the hearing agenda.

5.4.6.1 Time Keeping: Keeping of time for testimony by an individual shall be by an automatic timing device. Remaining time shall be evident to the person testifying. Interruptions during testimony shall not be tolerated. The Moderator shall maintain appropriate decorum during all testimony.

5.4.6.2 Proponent Testimony: The Proponent is permitted to waive an initial statement. The Proponent shall be permitted to have the amount of time that would have been allocated during the initial testimony period plus the amount of time that would be allocated for rebuttal. Where the code change proposal is submitted by multiple proponents, this provision shall permit only one proponent of the joint submittal to be allotted additional time for rebuttal.

5.4.7 Points of Order: Any person participating in the public hearing may challenge a procedural ruling of the Moderator or the Chairman. A majority vote of the eligible voters as determined in Section 5.7.4 shall determine the decision.

5.5 Floor Discussion: The Moderator shall place each code change proposal before the hearing for discussion by identifying the proposal and by regulating discussion as follows:

5.5.1 Discussion Order:

1. *Proponents.* The Moderator shall begin by asking the proponent and then others in support of the proposal for their comments.
2. *Opponents.* After discussion by those in support of a proposal, those opposed hereto, if any, shall have the opportunity to present their views.
3. *Rebuttal in support.* Proponents shall then have the opportunity to rebut points raised by the opponents.
4. *Rerebuttal in opposition.* Opponents shall then have the opportunity to respond to the proponent's rebuttal.

5.5.2 Modifications: Modifications to proposals may be suggested from the floor by any person participating in the public hearing. The person proposing the modification is deemed to be the proponent of the modification.

5.5.2.1 Submission and Written Copies. All modifications must be written, unless determined by the Chairman to be either editorial or minor in nature. The modification proponent shall provide 20 copies to the Secretariat for distribution to the committee.

5.5.2.2 Criteria. The Chairman shall rule proposed modifications in or out of order before they are discussed on the floor. A proposed modification shall be ruled out of order if it:

1. is not legible, unless not required to be written in accordance with Section 5.5.2.1; or
2. changes the scope of the original proposal; or
3. is not readily understood to allow a proper assessment of its impact on the original proposal or the code.

The ruling of the Chairman on whether or not the modification is in or out of order shall be final and is not subject to a point of order in accordance with Section 5.4.7.

5.5.2.3 Testimony. When a modification is offered from the floor and ruled in order by the Chairman, a specific floor discussion on that modification is to commence in accordance with the procedures listed in Section 5.5.1.

5.6 Committee Action: Following the floor discussion of each code change proposal, one of the following motions shall be made and seconded by members of the committee.

1. Approve the code change proposal as submitted (AS) or
2. Approve the code change proposal as modified with specific modifications (AM), or
3. Disapprove the code change proposal (D)

Discussion on this motion shall be limited to Code Development Committee members. If a committee member proposes a modification which had not been proposed during floor discussion, the Chairman shall rule on the modification in accordance with Section 5.5.2.2 If a committee member raises a matter of issue, including a proposed modification, which has not been proposed or discussed during the floor discussion, the Moderator shall suspend the committee discussion and shall reopen the floor discussion for comments on the specific matter or issue. Upon receipt of all comments from the floor, the Moderator shall resume committee discussion.

The Code Development Committee shall vote on each motion with the majority dictating the committee's action. Committee action on each code change proposal shall be completed when one of the motions noted above has been approved. Each committee vote shall be supported by a reason.

The Code Development Committee shall maintain a record of its proceedings including the action on each code change proposal.

5.7 Assembly Consideration: At the conclusion of the committee's action on a code change proposal and before the next code change proposal is called to the floor, the Moderator shall ask for a motion from the public hearing attendees who may object to the committee's action. If a motion in accordance with Section 5.7.1 is not brought forward on the committee's action, the results of the public hearing shall be established by the committee's action. If a motion in accordance with Section 5.7.1 is brought forward and

is sustained in accordance with Section 5.7.3, both the committee's action and the assemblies' action shall be reported as the results of the public hearing. Where a motion is sustained in accordance with Section 5.7.3, such action shall be the initial motion considered at Final Action Consideration in accordance with Section 7.3.8.2.

5.7.1 Floor Motion: Any attendee may raise an objection to the committee's action in which case the attendee will be able to make a motion to:

1. Approve the code change proposal as submitted from the floor (ASF), or
2. Approve the code change proposal as modified from the floor (AMF) with a specific modification that has been previously offered from the floor and ruled in order by the Chairman during floor discussion (see Section 5.5.2) or has been offered by a member of the Committee and ruled in order by the Chairman during committee discussion (see Section 5.6), or
3. Disapprove the code change proposal from the floor (DF).

5.7.2 Discussion: On receipt of a second to the floor motion, the Moderator shall place the motion before the assembly for a vote. No additional testimony shall be permitted.

5.7.3 Assembly Action: The assembly action shall be in accordance with the following majorities based on the number of votes cast by eligible voters (See 5.7.4).

Committee Action	Desired Assembly Action		
	ASF	AMF	DF
AS	--	2/3 Majority	2/3 Majority
AM	2/3 Majority	2/3 Majority	2/3 Majority
D	2/3 Majority	2/3 Majority	--

5.7.4 Eligible Voters: All members of ICC in attendance at the public hearing shall be eligible to vote on floor motions. Only one vote authorized for each eligible attendee. Code Development Committee members shall be eligible to vote on floor motions. Application, whether new or updated, for ICC membership must be received by the Code Council ten days prior to the commencement of the first day of the public hearing.

5.8 Report of the Public Hearing: The results of the public hearing, including committee action and successful assembly action, shall be posted on the ICC website not less than 60 days prior to Final Action Consideration except as approved by the ICC Board.

6.0 Public Comments

6.1 Intent: The public comment process gives attendees at the Final Action Hearing an opportunity to consider specific objections to the results of the public hearing and more thoughtfully prepare for the discussion for Final Action Consideration. The public comment process expedites the Final Action Consideration at the Final Action Hearing by limiting the items discussed to the following:

6.1.1 Consideration of items for which a public comment has been submitted; and
6.1.2 Consideration of items which received a successful assembly action at the public hearing.

6.2 Deadline: The deadline for receipt of a public comment to the results of the public hearing shall be announced at the public hearing but shall not be less than 30 days from the availability of the report of the results of the public hearing (see Section 5.8).

6.3 Withdrawal of Public Comment: A public comment may be withdrawn by the public commenter at any time prior to Final Action Consideration of that comment. A withdrawn public comment shall not be subject to Final Action Consideration. If the only public comment to a code change proposal is withdrawn by the public commenter prior to the vote on the consent agenda in accordance with Section 7.3.4, the proposal shall be considered as part of the consent agenda. If the only public comment to a code change proposal is withdrawn by the public commenter after the vote on the consent agenda in accordance with Section 7.3.4, the proposal shall continue as part of the individual consent agenda in accordance with Section 7.3.5, however the public comment shall not be subject to Final Action Consideration.

6.4 Form and Content of Public Comments: Any interested person, persons, or group may submit a public comment to the results of the public hearing which will be considered when in conformance to these requirements. Each public comment to a code change proposal shall be submitted separately and shall be complete in itself. Each public comment shall contain the following information:

6.4.1 Public comment: Each public comment shall include the name, title, mailing address, telephone number and email address of the public commenter. If group, organization, or committee submits a public comment, an individual with prime responsibility shall be indicated. If a public comment is submitted on behalf a client, group, organization or committee, the name and mailing address of the client, group, organization or committee shall be indicated. The scope of the public comment shall be consistent with the scope of the original code change proposal, committee action or successful assembly action. Public comments which are determined as not within the scope of the code change proposal, committee action or successful assembly action shall be identified as such. The public commenter shall be notified that the public comment is considered an incomplete public comment in accordance with Section 6.5.1 and the public comment shall be held until the deficiencies are corrected. A copyright release in accordance with Section 3.3.4.5 shall be provided with the public comment.

6.4.2 Code Reference: Each public comment shall include the code change proposal number and the results of the public hearing, including successful assembly actions, on the code change proposal to which the public comment is directed.

6.4.3 Multiple public comments to a code change proposal. A proponent shall not submit multiple public comments to the same code change proposal. When a proponent submits multiple public comments to the same code change proposal, the public comments shall be considered as incomplete public comments and processed in accordance with Section 6.5.1. This restriction shall not apply to public comments that attempt to address differing subject matter within a code section.

6.4.4 Desired Final Action: The public comment shall indicate the desired final action as one of the following:

1. Approve the code change proposal as submitted (AS), or
2. Approve the code change proposal as modified (AM) by one or more specific modifications published in the Results of the Public Hearing or published in a public comment, or
3. Disapprove the code change proposal (D)

6.4.5 Supporting Information: The public comment shall include in a statement containing a reason and justification for the desired final action on the code change proposal. Reasons and justification which are reviewed in accordance with Section 6.4 and determined as not germane to the technical issues addressed in the code change proposal or committee action shall be identified as such. The public commenter shall be notified that the public comment is considered an incomplete public comment in accordance with Section 6.5.1 and the public comment shall be held until the deficiencies are corrected. The public commenter shall have the right to appeal this action in accordance with the policy of the ICC Board. A bibliography of any substantiating material submitted with a public comment shall be published with the public comment and the substantiating material shall be made available at the Final Action Hearing.

6.4.6 Number: One copy of each public comment and one copy of all substantiating information shall be submitted. Additional copies may be requested when determined necessary by the Secretariat. A copy of the public comment in electronic form is preferred.

6.5 Review: The Secretariat shall be responsible for reviewing all submitted public comments from an editorial and technical viewpoint similar to the review of code change proposals (See Section 4.2).

6.5.1 Incomplete Public Comment: When a public comment is submitted with incorrect format, without the required information or judged as not in compliance with these Rules of Procedure, the public comment shall not be processed. The Secretariat shall notify the public commenter of the specific deficiencies and the public comment shall be held until the deficiencies are corrected, or the public comment shall be returned to the public commenter with instructions to correct the deficiencies with a final date set for receipt of the corrected public comment.

6.5.2 Duplications: On receipt of duplicate or parallel public comments, the Secretariat may consolidate such public comments for Final Action Consideration. Each public commenter shall be notified of this action when it occurs.

6.5.3 Deadline: Public comments received by the Secretariat after the deadline set for receipt shall not be published and shall not be considered as part of the Final Action Consideration.

6.6 Publication: The public hearing results on code change proposals that have not been public commented and the code change proposals with public commented public hearing results and successful assembly actions shall constitute the Final Action Agenda. The Final Action Agenda shall be posted on the ICC website at least 30 days prior to Final Action consideration.

7.0 Final Action Consideration

7.1 Intent: The purpose of Final Action Consideration is to make a final determination of all code change proposals which have been considered in a code development cycle by a vote cast by eligible voters (see Section 7.4).

7.2 Agenda: The final action consent agenda shall be comprised of proposals which have neither an assembly action nor public comment. The agenda for public testimony and individual consideration shall be comprised of proposals which have a successful assembly action or public comment (see Sections 5.7 and 6.0).

7.3 Procedure: *The Robert's Rules of Order* shall be the formal procedure for the conduct of the Final Action Consideration except as these Rules of Procedure may otherwise dictate.

7.3.1 Open Meetings: Public hearings for Final Action Consideration are open meetings. Any interested person may attend and participate in the Floor Discussion.

7.3.2 Agenda Order: The Secretariat shall publish an agenda for Final Action Consideration, placing individual code change proposals and public comments in a logical order to facilitate the hearing. The proponents or opponents of any proposal or public comment may move to revise the agenda order as the first order of business at the public hearing, or at any time during the hearing except while another proposal is being discussed. Preference shall be given to grouping like subjects together and for moving items back to a later position on the agenda as opposed to moving items forward to an earlier position. A motion to revise the agenda order is subject to a 2/3 vote of those present and voting.

7.3.3 Presentation of Material at the Public Hearing: Information to be provided at the hearing shall be limited to verbal presentations. Audio-visual presentations are not permitted. Substantiating material submitted in accordance with Section 6.4.4 and other material submitted in response to a code change proposal or public comment shall be located in a designated area in the hearing room.

7.3.4 Final Action Consent Agenda: The final action consent agenda (see Section 7.2) shall be placed before the assembly with a single motion for final action in accordance with the results of the public hearing. When the motion has been seconded, the vote shall be taken with no testimony being allowed. A simple majority (50% plus one) based on the number of votes cast by eligible voters shall decide the motion.

7.3.5 Individual Consideration Agenda: Upon completion of the final action consent vote, all proposed changes not on the final action consent agenda shall be placed before the assembly for individual consideration of each item (see Section 7.2).

7.3.6 Reconsideration: There shall be no reconsideration of a proposed code change after it has been voted on in accordance with Section 7.3.8.

7.3.7 Time Limits: Time limits shall be established as part of the agenda for testimony on all proposed changes at the beginning of each hearing session. Each person requesting to testify on a change shall be given equal time. In the interest of time and fairness to all hearing participants, the Moderator shall have limited authority to modify time limitations on debate. The Moderator shall have the authority to adjust time limits as necessary in order to complete the hearing agenda.

7.3.7.1 Time Keeping: Keeping of time for testimony by an individual shall be by an automatic timing device. Remaining time shall be evident to the person testifying. Interruptions during testimony shall not be tolerated. The Moderator shall maintain appropriate decorum during all testimony.

7.3.8 Discussion and Voting: Discussion and voting on proposals being individually considered shall be in accordance with the following procedures:

7.3.8.1 Allowable Final Action Motions: The only allowable motions for final action are Approval as Submitted, Approval as Modified by one or more modifications published in the Final Action Agenda, and Disapproval.

7.3.8.2 Initial Motion: The Code Development Committee action shall be the initial motion considered, unless there was a successful assembly action in accordance with Section 5.7.3. If there was a successful assembly action, it shall be the initial motion considered. If the assembly action motion fails, the code development committee action shall become the next motion considered.

7.3.8.3 Motions for Modifications: Whenever a motion under consideration is for Approval as Submitted or Approval as Modified, a subsequent motion and second for a modification published in the Final Action Agenda may be made (see Section 6.4.3). Each subsequent motion for modification, if any, shall be individually discussed and voted before returning to the main motion. A two-thirds majority based on the number of votes cast by eligible voters shall be required for a successful motion on all modifications.

7.3.8.4 Voting: After dispensing with all motions for modifications, if any, and upon completion of discussion on the main motion, the Moderator shall then ask for the vote on the main motion. If the motion fails to receive the majority required in Section 7.5, the Moderator shall ask for a new motion.

7.3.8.5 Subsequent Motion: If the initial motion is unsuccessful, a motion for one of the other allowable final actions shall be made (see Section 7.3.8.1) and dispensed with until a successful final action is achieved. If a successful final action is not achieved, Section 7.5.1 shall apply.

7.3.9 **Proponent testimony:** The Proponent of a public comment is permitted to waive an initial statement. The Proponent of the public comment shall be permitted to have the amount of time that would have been allocated during the initial testimony period plus the amount of time that would be allocated for rebuttal. Where a public comment is submitted by multiple proponents, this provision shall permit only one proponent of the joint submittal to waive an initial statement.

7.3.10 **Points of Order:** Any person participating in the public hearing may challenge a procedural ruling of the Moderator. A majority vote of the eligible voters as determined in Section 5.7.4 shall determine the decision.

7.4 **Eligible voters:** ICC Governmental Member Representatives and Honorary Members in attendance at the Final Action Hearing shall have one vote per eligible attendee on all International Codes. Applications, whether new or updated, for governmental member voting representative status must be received by the Code Council ten days prior to the commencement of the first day of the Final Action Hearing in order for any designated representative to be eligible to vote.

7.5 **Majorities for Final Action:** The required voting majority based on the number of votes cast of eligible voters shall be in accordance with the following table:

Public Hearing Action (see note)	**Desired Final Action**		
	AS	**AM**	**D**
AS	Simple Majority	2/3 Majority	Simple Majority
AM	2/3 Majority	Simple Majority to sustain the Public Hearing Action or; 2/3 Majority on additional modifications and 2/3 on overall AM	Simple Majority
D	2/3 Majority	2/3 Majority	Simple Majority

Note: The Public Hearing Action includes the committee action and successful assembly action.

7.5.1 **Failure to Achieve Majority Vote:** In the event that a code change proposal does not receive any of the required majorities for final action in Section 7.5, final action on the code change proposal in question shall be disapproval.

7.6 **Publication:** The Final action on all proposed code changes shall be published as soon as practicable after the determination of final action. The exact wording of any resulting text modifications shall be made available to any interested party.

8.0 Appeals

8.1 **Right to Appeal:** Any person may appeal an action or inaction in accordance with CP-1.

2009/2010 ICC CODE DEVELOPMENT CYCLE
CROSS INDEX OF PROPOSED CODE CHANGES

Some of the proposed code changes include sections that are outside of the scope of the chapters or the code listed in the table of 2009/2010 Staff Secretaries on page ix. This is done in order to facilitate coordination among the International Codes which is one of the fundamental principles of the International Codes.

Listed in this cross index are proposed code changes that include sections of codes or codes other than those listed on page ix. For example, IBC Section 402.16.5 is proposed for revision in Part II of code change F58-09/10, which is to be heard by the IFC Committee. This section of the IBC is typically the responsibility of the IBC General Committee as listed in the table of 2009/2010 Staff Secretaries. It is therefore identified in this cross index. Another example is Section 905.4 of the International Fire Code. The International Fire Code is normally maintained by the IFC Committee, but Section 905.4 will be considered for revision in proposed code change G31-09/10 and will be placed on the IBC General Committee agenda. In some instances, there are other subsections that are revised by an identified code change that is not included in the cross index. For example, numerous sections in Chapter 10 of the International Fire Code would be revised by the proposed changes to Chapter 10 of the IBC. This was done to keep the cross index brief enough for easy reference.

This information is provided to assist users in locating all of the proposed code changes that would affect a certain section or chapter. For example, to find all of the proposed code changes that would affect Chapter 7 of the IBC, review the proposed code changes in the Volume 1 monograph for the IBC Fire Safety Committee (listed with a FS prefix) then review this cross reference for Chapter 7 of the IBC for proposed code changes published in other code change groups. While care has been taken to be accurate, there may be some omissions in this list.

Letter prefix: Each proposed change number has a letter prefix that will identify where the proposal is published. The letter designations for proposed changes and the corresponding publications are as follows:

PREFIX	**PROPOSED CHANGE GROUP (see monograph table of contents for location)**
ADM	Administrative
E	International Building Code - Means of Egress
EB	International Existing Building Code
EC	International Energy Conservation Code
F	International Fire Code
FG	International Fuel Gas Code
FS	International Building Code - Fire Safety
G	International Building Code - General
M	International Mechanical Code
PC	ICC Performance Code
P	International Plumbing Code
PSD	International Private Sewage Disposal Code
PM	International Property Maintenance Code
RB	International Residential Code - Building
RE	International Residential Code - Energy
RM	International Residential Code - Mechanical
RP	International Residential Code - Plumbing
S	International Building Code - Structural
WUIC	International Wildland-Urban Interface Code
Z	International Zoning Code

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R903.4	S2-09/10, Part III (heard by IRC Plumbing)
R903.4.1	S2-09/10, Part III (heard by IRC Plumbing)
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R905.2.7.2	S15-09/10, Part II
R905.2.8.5 (New)	S16-09/10, Part II
R905.3.3.3	S15-09/10, Part II
R905.4.3.2 (New)	S15-09/10, Part II
R905.4.5.1 (New)	S17-09/10, Part II
R905.5.3.2 (New)	S15-09/10, Part II
R905.6.3.2 (New)	S15-09/10, Part II
R905.7.3.2 (New)	S15-09/10, Part II
R905.8.3.2 (New)	S15-09/10, Part II
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R1003.9.3 (New)	S182-09/10, Part II
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N1102.2.11	EC68 Part II
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N1102.3.3 (New)	EC73 Part II
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N1102.4.1.1(New)	EC79 Part II
N1102.4.1.2 (New)	EC79 Part II
N1102.4.2	EC81, EC82, EC83, EC86, EC90

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N1103.1.3 (New)	EC100 Part II
N1103.2.1	EC103 Part II
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T N1103.6 (New)	EC121 Part II
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Table P2608.4	P7 Part II
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P2902.5.4.1	P99 Part II
P2902.5.5	P94 Part II
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P3007.3.3 (New)	P115 Part II
P3007.3.3.1 (New)	P115 Part II
P3007.3.3.2 (New)	P115 Part II
P3007.3.5	P116 Part II
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P3201.2	P136 Part II
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Appendix K	G147 Part II
Appendix L	G204 Part II

INT. WILDLAND-URBAN INTERFACE CODE	
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101.3	ADM3
102.4	ADM4
115 (New)	ADM16 Part I
Chapter 15	ADM39
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Chapter 1	ADM1 Part XI
101.2	ADM3
112 (New)	ADM16 Part I
Chapter 14	ADM39

2009/2010 ICC CODE DEVELOPMENT HEARING SCHEDULE

October 24 – November 11, 2009
Hilton Baltimore

Unless noted by "Start no earlier than X am/pm," each Code Committee will begin immediately upon completion of the hearings for the prior Committee. Thus the actual start times for the various Code Committees are tentative. The hearing volume is higher than previous cycles. The schedule anticipates that the hearings will finish by the times noted as "Finish" for each track and each week.

CODE DEVELOPMENT HEARINGS: OCTOBER 24 - 31

	Saturday October 24	Sunday October 25	Monday October 26	Tuesday October 27	Wednesday October 28	Thursday October 29	Friday October 30	Saturday October 31
TRACK 1	Start 8 am IWUIC IFC End 8 pm	Start 10 am IFC End 8 pm	Start 8 am IFC IRC-Energy (Start no earlier than 1 pm) End 8 pm	Start 8 am IRC – Energy End 8 pm	Start 8 am IRC-Building (Start no earlier than 8 am) End 8 pm	Start 8 am IRC- Building End 8 pm	Start 8 am IRC – Building Admin (Start no earlier than 3 pm) End 8 pm	Start 8 am Admin Finish 3 pm
TRACK 2	Start 8 am IBC-Structural End 8 pm	Start 10 am IBC-Structural End 8 pm	Start 8 am IBC-Structural End 8 pm	Start 8 am IBC-Structural End 8 pm	Start 8 am IECC (Start no earlier than 8 am) End 8 pm	Start 8 am IECC End 8 pm	Start 8 am IECC End 8 pm	Start 8 am IECC Finish 8 pm

ANNUAL CONFERENCE: NOVEMBER 1 - 4

CODE DEVELOPMENT HEARINGS: NOVEMBER 4 - 11

	Wednesday November 4	Thursday November 5	Friday November 6	Saturday November 7	Sunday November 8	Monday November 9	Tuesday November 10	Wednesday November 11
TRACK 1	Start 8 am IPM/ZC IEBC IBC-Fire Safety End 5 pm	Start 8 am IBC-Fire Safety End 8 pm	Start 8 am IBC – Fire Safety IBC – General (Start no earlier than 3 pm) End 8 pm	Start 8 am IBC - General End 8 pm	Start 10 am IBC – General IBC – Egress (Start no earlier than 3 pm) End 8 pm	Start 8 am IBC - Egress End 8 pm	Start 8 am IBC - Egress End 8 pm	Start 8 am IBC - Egress Finish 12 pm
TRACK 2	Start 8 am IPC/IPSDC End 5 pm	Start 8 am IPC/IPSDC End 9 pm	Start 8 am IMC (Start no earlier than 8 am) End 9 pm	Start 8 am IMC IRC-Plumbing/ Mechanical (Start no earlier than 1 pm) End 9 pm	Start 10 am IRC – Plumbing/ Mechanical End 9 pm	Start 8 am IRC – Plumbing/ Mechanical IFGC (Start no earlier than 8 am) Finish 9 pm	NO HEARINGS TRACK 2 COMPLETED	

Notes:

1. Hearing times may be modified at the discretion of the Chairman. Breaks will be announced.
2. Proposed code changes submitted to the International Wildland-Urban Interface Code (IWUIC) to be heard by the IFC Committee.
3. Proposed code changes submitted to the International Zoning (Z) and Property Maintenance (PM) Codes to be heard by the IPM/Z Committee.
4. "Admin" is a new code committee who will hear changes that affect coordination of Chapter 1 of all the I-Codes, except the IRC, and referenced standards updates.

2009/2010 PROPOSED CHANGES TO THE INTERNATIONAL CODES

Registration
Delegate

2009 Annual Conference and
Code Development Hearings

Hearings: October 24–31 and November 4–11
Hilton Baltimore

Conference: November 1–4
Baltimore Convention Center

FIRST NAME AND M.I. | LAST NAME/SURNAME

JOB TITLE

JURISDICTION/ORGANIZATION

MAILING ADDRESS

CITY | STATE/PROVINCE | ZIP/POSTAL CODE

COUNTRY | E-MAIL (MUST PROVIDE TO RECEIVE CONFIRMATION)

PHONE (SPECIFY COUNTRY AND CITY CODE IF OUTSIDE THE U.S.) | FAX (SPECIFY COUNTRY AND CITY CODE IF OUTSIDE THE U.S.)

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☐ Full Conference Registration (includes all business, education and social functions)	$495*	$625*	$560*	$685*
☐ Code Development Hearings only (Registration is required to verify voting status)	FREE Registration		FREE Registration	
☐ One-Day Education ☐ Monday, November 2 ☐ Tuesday, November 3	$125	$160	$160	$190
☐ Golf Tournament (per person)** Handicap _____	$75	$75	$125	$125
☐ Golf Club Rental** ☐ Men's ☐ Women's ☐ Left ☐ Right	$25	$25	$25	$25

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If you are registering for one day of education only, please check the day you will be attending and enter your session selection number.

☐ **Monday, November 2**
1:15 pm–4:15 pm
Session selection: # _____

☐ **Tuesday, November 3**
1:15 pm–4:15 pm
Session selection: # _____

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ID Number _____

FLORIDA
☐ Building Code Administrators & Inspectors Board
ID Number _____

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ID Number _____

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☐ Fire Fighter Standards and Training Council
ID Number _____

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☐ Johnson County Contractor Licensing
ID Number _____

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ID Number _____

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ID Number _____

MASSACHUSETTS
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MARYLAND
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MICHIGAN
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ID Number _____

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ID Number _____

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Requires Social Security # _____
ID Number _____

☐ Department of State, Office of Fire Prevention
Requires Social Security # _____
FDID #/City Code _____
County Code _____
ID Number _____

NORTH CAROLINA
☐ Code Officials Qualification Board
Requires Driver's License # _____
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OHIO
☐ Ohio Department of Commerce, Board of Building Standards
ID Number _____

☐ Ohio Department of Commerce, Division of Industrial Compliance, Plumbing Section
ID Number _____

OKLAHOMA
☐ Construction Industries Board, Inspector Examining Committee
ID Number _____

PENNSYLVANIA
☐ Department of Labor and Industry
ID Number _____

RHODE ISLAND
☐ State Building Code Commission
ID Number _____

SOUTH CAROLINA
☐ Department of Labor, Licensing and Regulation Board of Building Codes Council
ID Number _____

TENNESSEE
☐ Commerce and Insurance, Fire Prevention Division (aka State Fire Marshal's Office)
ID Number _____

TEXAS
☐ Department of Licensing and Regulation, Electrical Safety and Licensing Advisory Board
ID Number _____

UTAH
☐ Division of Occupational and Professional Licensing, Contractor Licensing
ID Number _____

WISCONSIN
☐ Safety and Buildings Division
ID Number _____

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2009/2010 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE-FIRE SAFETY COMMITTEE

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State of New York Division of Code Enforcement
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International Code Council

TENTATIVE ORDER OF DISCUSSION

2009/2010 PROPOSED CHANGES TO THE INTERNATIONAL BUILDING CODE

FIRE SAFETY

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

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation does **not** necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair.

FS1-09/10
FS2-09/10
FS3-09/10
FS4-09/10
FS5-09/10
FS6-09/10
FS7-09/10
FS8-09/10
FS9-09/10
FS10-09/10
    G42-09/10
    G41-09/10
FS11-09/10
FS12-09/10
FS13-09/10
FS14-09/10
FS15-09/10
FS16-09/10
FS17-09/10
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FS19-09/10
FS20-09/10
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FS24-09/10
FS25-09/10
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FS27-09/10
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FS40-09/10
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FS111-09/10
FS112-09/10
FS113-09/10
FS114-09/10
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FS116-09/10
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FS118-09/10, Part I
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FS127-09/10
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FS1–09/10
701.1

Proponent: Sarah A. Rice, CBO, representing self

1. Revise as follows:

CHAPTER 7

CONSTRUCTION OF HORIZONTAL AND VERTICAL ASSEMBLIES
~~**FIRE AND SMOKE PROTECTION FEATURES**~~

2. Revise as follows:

SECTION 701 GENERAL

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

Reason: This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits.
Chapter 7 is currently titled "Fire and Smoke Protection Features" and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies. Through a series of code changes, including this one, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change addresses the title of Chapter 7 and Sections 701 (General).

The changes to the title and to Section 701 is made to make it clear that the provisions found in Chapter 7 are not just fire resistance rated or smoke protected assemblies but to all Vertical and Horizontal assemblies regardless of their rating.

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-FS1a-701.1

FS2–09/10
701.2 (New)

Proponent: Stephen Thomas, Colorado Code Consulting, LLC, representing the Colorado Chapter

Add new text as follows:

701.2 Multiple use fire assemblies. Fire assemblies that serve multiple purposes in a building shall comply with all of the requirements that are applicable for each of the individual fire assemblies.

Reason: A single fire assembly can serve multiple purposes in a structure. For example, a fire barrier along a fire-resistant rated corridor would also serve as a fire partition. The current code does not provide any direction on what requirements apply to that assembly. The intent of this proposal is to clarify that the requirements for each of the different assemblies must be met. In the example above, an opening protective would need to comply with the not only the fire-resistance rating for a fire barrier, but also the smoke and draft control requirements for an opening in a fire partition.

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

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

ICCFILENAME: THOMAS-FS1-701.2 (New)

FS3–09/10
702.1

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

Revise as follows:

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

Reason: The purpose of this proposal is to clarify that a "Joint", as defined in the IBC, may or may not be linear, and that the Joint is not the "opening" between fire resistance rated assemblies, but rather the materials or methods used to treat these openings

Justification: "Joints" are interfaces created in or between building elements such as walls, floors, columns or other building items. A joint typically involves a continuous void at the interface of two or more distinct components. When joints are designed into a structure, they are intended to allow independent movement of the building in any plane caused by thermal, seismic, wind or any other loading. However, joints are sometimes created as a result of building construction tolerances.

In fact, a Joint is never an "opening" as the current definition suggests, but instead they are the closures that go into the opening to provide continuity. The existing language in the definition already clarifies that the definition applies to both locations that are "… designed to allow independent movement" and also those created due to construction tolerances, and need to be treated. Consequently, the additional language addresses' that portion of the scope of the definition.

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

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

ICCFILENAME: CRIMI-FS6-702.1

FS4–09/10
703.4 (New)

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

Add new text as follows:

703.4 Automatic sprinklers. The fire resistance rating of a building element, component or assembly shall be established without the use of automatic sprinklers or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures, and acceptance criteria specified in ASTM E119 or UL 263.

(Renumber subsequent sections)

Reason: There is a potential for misuse of established fire-resistance test Standards relied upon in the Code to determine performance of elements and assemblies, wherein the established consensus test method are modified outside the scope of the test standard to include a flow of cooling water during the fire exposure portion of the test.

Since some material manufacturers have begun to submit test reports to Authorities Having Jurisdiction with fire-resistance ratings obtained using a flow of cooling water during the fire test, it now becomes important to clarify that the code-required fire resistance rating is in fact a property that is meant to represent the inherent resistance to fire without the assistance of cooling flows. In countless instances, the code already incorporates the risk-reducing effect of a cooling flow from an extinguishing system by reducing the fire-resistance requirements, or by reducing other required safety measures.

The possibility of reducing some code requirements based on the improved behavior of an assembly when subjected to a cooling water flow can already be done via Alternative protection methods as allowed by Section 104.11, or by evaluation as a performance-based option. Thus, the only impact of this code change is to prevent a manufacturer of products from claiming an inflated fire resistance rating. The code change would not restrict anyone from proving that the addition of a cooling and/or extinguishing water flow can reduce some other requirement in the code.

It has never been the intent of either the Codes or the fire resistance testing Standards to incorporate the fire suppression system as part of the fire resistance rating of a building element, component or assembly. It would not be acceptable to have a fire-resistance rating that is determined during a test using a cooling flow, since the need for a fire resistive assembly is usually required by the Code in order to provide a an inherent passive level of fire protection. The notion of multiple safeguards and "Balanced Fire Protection" is not new to the Codes. It has long been a basic tenet that the design of every building or structure intended for human occupancy shall be such that reliance for safety to life does not depend solely on any single safeguard. Additional safeguards are provided for life safety in case any single safeguard is ineffective due to inappropriate human actions or system failure.

The resulting cooling-enhanced fire resistance rating then provides a result that would be incompatible with the required fire resistance ratings specified throughout the I-Codes. The various fire resistance ratings mandated throughout dozens of articles in the Code have been established based on an assumption of the type of construction that would pass the standardized tests without the aid of water cooling during fire exposure. For example, a relatively thin and un-insulated metal panel wall with suitable water cooling could potentially be arranged to pass a 1-hour standardized fire-resistance test, and possibly even longer duration fire-resistance tests. However, where the Code specifies the need for a 1-hour assembly, the intent in the development of that code provision would have clearly been to have an assembly that could survive a fire without being breached and

without losing any load-bearing capabilities all by itself, without relying on an external water source for continued cooling. If sprinkler protection was also required for such an occupancy, then the overall intent of the Code is to have these two systems act independently, but in concert with each other.

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

Analysis: Standards ASTM E119 and UL 263 are currently referenced in the I-codes.

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

ICCFILENAME: CRIMI-FS3-703.4

FS5–09/10
703.4.1

Proponent: Richard Porter and Robert Sullivan, cfiFOAM, Inc., representing themselves

Revise as follows:

703.4.1 Elementary materials. Materials required to be noncombustible shall be tested in accordance with ASTM E 136.

> **Exception:** Where foam plastic insulation is encased within either the core cells of concrete masonry wall assemblies or within the core spaces of precast hollow core concrete panel wall assemblies, the potential heat of the foam plastic insulation shall be determined in accordance with NFPA 259 and the results shall be expressed in Btu per square feet (MJ/m^2).

Reason: Section 2603 FOAM PLASTIC INSULATION makes no reference to ASTM E 136 but instead points to the significance of testing in accordance with NFPA 259 to measure the potential heat contribution of the foam plastic insulation incorporated into a wall or panel.

On one hand, NFPA 259 data shows that foam plastic insulation contributes very little fuel per square foot (MJ/W) of wall or panel area by virtue of its very low density; therefore, the presence of foam plastic insulation has little or no impact upon the fire resistance performance of a wall or panel assembly.

In measuring fuel contribution per wall or panel area, NFPA 259 data provides superior information vs. ASTM E 136 which provides only pass/fail criteria having to do with temperature rise and the fragility of foam plastic insulation.

On the other hand, foam plastic insulation offers resistance to heat flow as does any insulating material. By virtue of its encased presence within concrete masonry wall and precast concrete panel assemblies, the initial heat-up of assemblies exposed to fire is slightly retarded up to or until the point where the foam plastic insulation thermally degrades. This slight heat flow delay contributes slightly to the fire-rating of the wall assembly.

The positive contribution on the one hand is off-set by the negative contribution on the other hand.

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

Analysis: Standard NFPA 259 is currently referenced in the I-codes.

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

ICCFILENAME: PORTER-SULLIVAN-FS1-703.4.1

FS6–09/10
703.5.1 (New)

Proponent: Lynn Warren Manley, Staff Architect State of Illinois Department of Public Health/Health Care Facilities and Programs, representing self

Add new text as follows:

703.5 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 or UL 263 and complying with the requirements of Section 707, shall be permitted. Fire-resistance-rated glazing shall bear a *label* or other identification showing the name of the manufacturer, the test standard and the identifier "W-XXX," where the "XXX" is the *fire-resistance rating* in minutes. Such *label* or identification shall be issued by an agency and shall be permanently affixed to the glazing.

703.5.1 Testing. Glazing shall be considered to comply with this section only if it has been tested in accordance with ASTM E 119 or U L 723 without use or consideration of a fire suppression system.

1. Opening protection used in exterior walls in accordance with 705.8.2.
2. Glazing wall systems or window openings used in atriums as permitted under 404.6

Reason: NER-516 was originally approved by the ES Committee under BOCA and was reissued by the ICC ES Committee in Reno in 2007. According to the proponents and with supporting agreement from ES staff members. This glazing system may be used as an equivalent system in any fire barrier, with almost no limitations.

The glazing system is tempered glass, it can be no higher than 13'0" and it cannot be used for hazardous areas. However, according to ES Staff and according to the report (NER-516) there are no limitations for its use as a glazing system in any fire barriers, Including but not limited to: exit enclosures, shaft enclosures, occupancy separations, horizontal exits, etc.

The test that this system passed was a simulated E 119 test that was terminated when the sprinkler system activated. No testing was conducted that simulated total or partial failure of the sprinkler system. Thls system did not pass E 119, but the ES Committee accepts the test as equivalent.

NER-516 amounts to a sprinkler trade off, eliminating all of the requirements for fire ratings where a sprinkler system is provided and installed as proposed in the ES Report.

The proponent of the above changes suggests that NER-516 is not a demonstration of equivalency but rather a code change that has not been considered or voted on by the ICC voting members.

Cost Impact: The cost impact is negligible and not relevant when compared to the loss from fire and loss of life if NER-516 becomes widely used without limitations.

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

ICCFILENAME: MANLEY-FS2-703.5.1 NEW

FS7–09/10
703.6

Proponent: Valarie Loper, City of North Las Vegas Building Safety

Revise as follows:

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

1. Be located in accessible concealed floor floor-ceiling or attic spaces;
2. Be ~~repeated~~ located with in 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144mm) measured horizontally along the wall or partition; and
3. Included lettering not less than 3 inches (76 mm) ~~0.5 inch (12.7mm)~~ in height in a contrasting color incorporating the suggested wording. “FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS” or other wording.

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

Reason: I believe this is a needed code to assist in maintaining the integrity of fire resistive construction. The change to a larger size of3 Inches will better ensure that the lettering will be seen by the contractors and subcontractors that will be creating unprotected openings in protected assemblies. The contrasting color will regulate that the lettering be installed in a color that will contrast the base color of the assembly also ensuring a better chance of this identification being achieved. To install this lettering within 15 feet of the end of each wall will also aid in the ability of the persons remodeling the existing wall to be informed of the need to protect any openings made. The maintaining of a fire resistive assembly is as important as the creating of the assembly was to begin with.

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

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

ICCFILENAME: LOPER-FS1-703.6.doc

FS8–09/10
704.1, 704.9 (New)

Proponent: Sarah A. Rice, CBO, representing self

1. Revise as follows:

SECTION 704
FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS

704.1 Requirements. ~~The *fire-resistance ratings* of~~ Structural members and assemblies required by Table 601 or other sections of this code to have a fire resistance rating shall comply with this section ~~and the requirements for the type of construction as specified in Table 601.~~

704.1.1 Assemblies supported by structural members. The *fire-resistance ratings* of the structural member shall not be less than the ratings required for the fire-resistance-rated assemblies supported by the structural members.

Exception: *Fire barriers*, *fire partitions*, *smoke barriers* and *horizontal assemblies* as provided in Sections 707.5, 709.4, 710.4 and 712.4, respectively.

2. Add new text as follows:

704.9 Interior walls - openings, penetrations, joints, air-transfer openings and duct openings. Openings, penetrations, joints, air-transfer openings and duct openings into and through interior walls required to be fire-resistance rated by only Table 601 are not required to be protected.

(Renumber subsequent sections)

Reason: This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits.

Chapter 7 is currently titled “Fire and Smoke Protection Features” and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies. Through a series of code changes, including this one, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change addresses Section and 704 (Fire-Resistance Rating of Structural Members).

The changes to Section 704 are intended to clarify how “holes” are to be regulated in interior wall assemblies that are only required to be fire resistance rated by Table 601 and by no other section in the code. Interior loadbearing walls rated by only Table 601 are not fire barriers, fire partitions, smoke partitions or smoke barriers UNLESS some other section of the code says they need to be. The proposed language makes it clear how “holes” in those walls are to be regulated .

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-FS1g-704.1

FS9–09/10
704.2, 704.3, 704.4

Proponent: Sam Francis representing American Forest & Paper Association

Revise as follows:

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

Exception: Columns complying with Section 602.4, 721.1 or 721.6.3

704.3 Protection of the primary structural frame other than columns. Members of the primary structural frame other than columns that are required to have a fire-resistance rating and support more than two floors or one floor and

roof, or support a load-bearing wall or a nonload-bearing wall more than two stories high, shall be provided individual encasement protection by protecting them on all sides for the full length, including connections to other structural members, with materials having the required fire-resistance rating.

Exceptions:

1. Individual encasement protection on all sides shall be permitted on all exposed sides provided the extent of protection is in accordance with the required fire-resistance rating, as determined in Section 703.
2. Members complying with Section 602.4, 721.1 or 721.6.3

704.4 Protection of secondary members. Secondary members that are required to have a fire-resistance rating shall be protected by individual encasement protection, by the membrane or ceiling of a horizontal assembly in accordance with 712, or by a combination of both

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

704.4.2 Alternative protection. Structural elements complying with Section 602.4, 721.1 or 721.6.3 shall not be required to comply with Section 704.4.

Reason: Wood members of sufficiently large section to be considered heavy timber have never been required to be protected with a membrane in order to be considered heavy timber. There has been some confusion about the fire resistive properties of heavy timber as compared to the fire resistance of large members determined by the calculation methodology in Section 721. This confusion has led to a misapplication of Section 714 and its provision for protecting the member on all sides by materials having the required fire resistance. In the case of large wood members used in Type IV Construction as defined in Section 602.4, there is an inherent protection afforded the member by the char layer that forms as the timber is pyrolized. Table 601 recognizes this unique characteristic and distinguishes it from a fire resistance by utilizing the term “heavy timber” to describe this type of construction.

Moreover, the calculation methodology in Section 721 also relies on the insulating qualities of the char layer in order to calculate the size of member which will afford a sufficient sacrificial layer and still have adequate section to resist 100% of the required loads imposed on it. Accordingly, neither members complying with Section 602 nor members complying with Section 721 require further protection as required in Section 704. This code change is intended to make it clear that large wood members conforming to 602 or to 721 are not required to have this additional and redundant layer of protection.

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

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

ICCFILENAME: FRANCIS-FS2-704.2

FS10–09/10
704.11

Proponent: Randy B. Maurer, Associated Building Inspections Inc., representing Pennsylvania Association of Building Code Officials, Inc.

Revise as follows:

704.11 Bottom flange protection. Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than ~~6 feet (1829mm)~~ 6 feet 4 inches (1931mm) whether part of the primary structural frame or not, and from the bottom flange of lintels, shelf angles and plates not part of the structural frame, regardless of span.

Reason: This change will accommodate the 6’-4” width of a pair of 36” doors in a hollow metal frame, which is common now due to accessibility requirements. It should not affect the safety inherent in the requirement.

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

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

ICCFILENAME: Maurer-FS1-704.11

FS11–09/10
705.2, TABLE 705.2 (New)

Proponent: Gary Lampella, City of Redmond, OR, representing Oregon Building Officials Association

1. Revise as follows:

SECTION 705
EXTERIOR WALLS

705.2. Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways shall also comply with Sections 1019 and 1026, respectively. Projections shall not extend beyond the distance determined by the following ~~three~~ two methods, whichever results in the lesser projection:

1. A point one-third the distance ~~from the exterior face of the wall~~ to the lot line ~~where protected openings or a combination of protected and unprotected openings are required in the exterior wall~~ from an assumed vertical plane in accordance with Table 705.2.
2. ~~A point one-half the distance from the exterior face of the wall to the lot line where all openings in the exterior wall are permitted to be unprotected or the building is equipped throughout with an automatic sprinkler system installed under the provisions of Section 705.8.2.~~
2 ~~3~~. More than 12 inches (305 mm) into areas where openings are prohibited.
3. For the purposes of determining allowable projections from buildings, the assumed vertical plane shall be measured at right angles from the lot line or, for buildings on the same lot, an imaginary line in accordance with Section 705.3. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this Section. The assumed vertical plane shall be parallel with the lot line or imaginary line.

2. Add new table as follows:

TABLE 705.2
ASSUMED VERTICAL PLANE (feet)

GROUP	TYPE I, II[a]	TYPE III, IV, V[a]
A, B, E, F-2, I, R, S-2, U	3	5[b]
M, S-1, F-1	5	10
H	15	20[c]

a. Based on type of construction in Chapter 6
b. I-2 occupancies are not permitted in Type VB construction
c. H-1 occupancies are not permitted in Type VB construction

3. Revise as follows:

705.2.3 Combustible projections. Combustible projections located ~~where openings are not permitted or where protection of openings is required~~ within 5 feet (1524 mm) of a lot line or imaginary line shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.

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

Reason: This code change is necessary to clarify how far projections from a building can extend into the fire separation distance. The purpose is to completely disassociate this section from Table 705.8. The proposal returns this section to its original intent to regulate projections based on occupancy and construction type that was a provision of a legacy code. This is recognizing that different occupancies of differing construction types present different levels of hazards. For instance, projections from an H-2 occupancy present a higher risk than projections from an S-1 occupancy and should be regulated as such. This section has been widely interpreted and misapplied.

The provision for projections in Section 705.2 is language from a legacy code that had definite measurements for when openings were required to be protected and when they were prohibited based on occupancy and construction type. With Section 705.8 and Table 705.8, the absolute measurement that was used in the previous legacy code is no longer present. This makes it very difficult to apply and has created inconsistency in application. There is different terminology between the IBC and the legacy code that does not allow the user to adequately apply this section.

The legacy code also stated that the assumed vertical plane for protection of openings was when they were “first” required to be protected. IBC Table 704.8 does not have a provision where you can definitely apply this assumed vertical plane. Utilizing the provisions of Equation 7-2 in Section 704.8.4 for a non-sprinklered M occupancy of IIIB construction 7 feet from the lot line if the combination of protected and unprotected was less than or equal to 1, there would be some required protected openings in the wall. But looking at the Table 704.8, protected openings could be required at

10 feet from the lot line using the same equation. Does one measure the distance from wall and its location in relation to the lot line or from the point at 10 feet where openings would have been required if they would have used the same equation? Or from some other assumed vertical plane?

The philosophy of this code change is to line up with the recent code changes that have occurred with the Table 508.4, Table 602 and other sections of the code that have based their merit on similar and dissimilar risks as well as similar fuel loads of occupancies. We have taken the approach of using Table 508.4, Table 602 and Table 706.4 to develop this language. As you can see, we tried to fit the occupancies and their exterior wall fire rating from Table 602 into this new table.

By putting some actual measurements into the code, we believe that this will vastly improve the application and consistency in which projections are regulated.

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

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

ICCFILENAME: LAMPELLA-FS1-705.2

FS12–09/10
705.2, Table 705.2 (New), 705.2.3

Proponent: Stephen Thomas, Colorado Code Consulting, LLC representing the Colorado Chapter ICC

1. Revise as follows:

705.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways shall also comply with Sections 1019 and 1026, respectively. ~~Projections shall not extend beyond the distance determined by the following three methods, whichever results in the lesser projection:~~ Projections shall not extend any closer to a lot line than permitted in Table 705.2.

Exception: Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.

~~1. A point one-third the distance from the exterior face of the wall to the *lot line* where protected openings or a combination of protected and unprotected openings are required in the *exterior wall*.~~
~~2. A point one-half the distance from the exterior face of the wall to the *lot line* where all openings in the *exterior wall* are permitted to be unprotected or the building is equipped throughout with an *automatic sprinkler system* installed under the provisions of Section 705.8.2.~~
~~3. More than 12 inches (305 mm) into areas where openings are prohibited. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.~~

2. Add new Table as follows:

Table 705.2
Minimum Distance of Projection from Lot Lines

Fire Separation Distance	Minimum distance from lot line
0 feet to less than 2 feet	Not Permitted
2 feet to less than 5 feet	24 inches
5 feet or greater	40 inches

3. Revise as follows:

705.2.3 Combustible projections. Combustible projections ~~located where openings are not permitted or where protection of openings is required~~ extending to within 5 feet of the lot line shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.

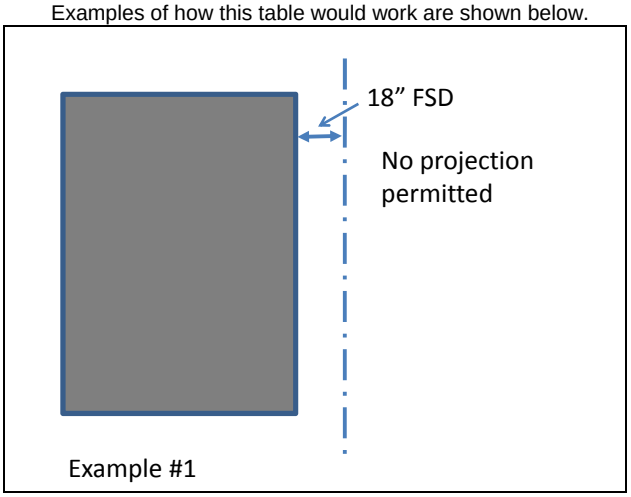
Exception: Type V construction shall be allowed for R-3 occupancies.

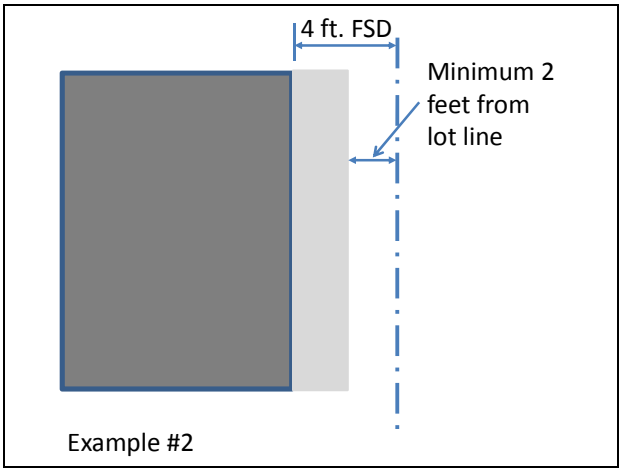
Reason: The current language outlining the requirements for projections is very confusing . Table 704.8 appears to have different distances where openings are required to be protected. However, when you really evaluate the table, the first option in Section 704.2 would occur at 5 feet (where openings are required to be protected) and the third option occurs at 3 feet (where openings are not permitted). The intent of this proposal is to simplify the requirement for determining the location of projections and when combustible projections are required to be protected. The proposal takes the language of the current first and third items and specifies the distance in a table format. The extent of the projection is now related to the

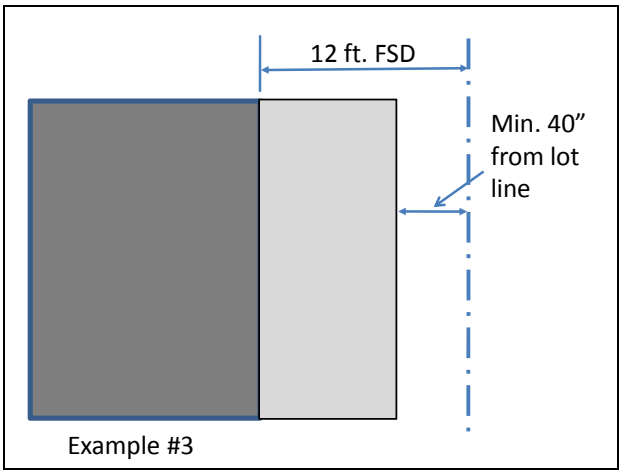
fire separation distance. The 24-inch requirement is based on item 3 of the current language and the 40-inch requirement is based on option 1 of the current requirement.

Item 2 in the current language is confusing and actually makes the code more restrictive than the language in the 2006 IBC. For example if a building is located 22 feet from the lot line, the projection would only be allowed to extend to within 11 feet from the lot line. The 2006 IBC and this proposal would allow the projection to extend to a point no closer than 40 inches from the lot line. Therefore, the item has been deleted and not addressed in the table.

Examples of how this table would work are shown below.







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

Analysis: Code change proposals FS12, FS13 and FS14 propose revisions to Section 705.2.3. The committee needs to make its intent clear with respect to these revisions.

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

ICCFILENAME: THOMAS-FS2-705.2

FS13–09/10
705.2.3

Proponent: Ali M. Fattah, City of San Diego, representing SD Area Chapter ICC Code Committee

Revise as follows:

705.2.3 Combustible projections. Combustible projections located where openings are not permitted, or where protection of openings is required or where a combination of protected and unprotected openings are required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.

Exception: Type VB construction shall be allowed for combustible projections in R-3 occupancies with a fire separation distance greater than or equal to 5 ft (1524 mm).

Reason: The proposed change adds clarity to the IBC. Code change FS14-07/08 amended Section 704.2 to improve the code section to make clear when the length of projections is to be limited due to fire separation; the section was brought to the IBC from a legacy Code that did not include table like Table 704.8 where the area of openings is limited and protected openings are an option to include more openings in a an exterior wall based on fire separation distance within ranges of distance. The initial portion of the code change merely continues the effort that was started in the prior code change cycle and extends the same logic to this Section. Using the word "location" makes clear that if the projection falls within the distance range it is subject to the requirement.

ICC has indicated that they believe that Code intends only portions of the eave extending into the regulated area to be protected since the protection is intended to prevent ignition; additionally the IBC in Table 602 requires measurement of fire separation perpendicular to the face of a wall so it is possible for portions of a wall at an angle to be connected to portions of a wall that are not protected. The proposed code change does not seek to make a change to current practice insofar as the extent of the protection along the projection is concerned.

The exception has been amended to require the same level of protection as the IRC and eliminates ambiguity as to whether rated or non rated projections are required. Table R302.1 of the 2009 IRC requires eaves located at a fire separation distance less than 5 ft to be protected with one-hour construction on the underside. Both the 2009 IRC ad 2009 IBC require sprinkler protection in R-3 occupancies so the codes should be comparable.

Without changing the exception, the code user could conclude that an exposed 12 inch long wood eave located within 24 inches from a lot line and supported on an exterior one hour rated wall located 3 ft from a lot line is permissible which makes no sense. The IBC and IRC have increased the level of exterior fire protection due to fire separation distance recognizing the vulnerability of least protected occupancies such R-3 from conflagration hazards.

Cost Impact: This proposal will minimally impact the cost of construction.

Analysis: Code change proposals FS12, FS13 and FS14 propose revisions to Section 705.2.3. The committee needs to make its intent clear with respect to these revisions.

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

ICCFILENAME: FATTAH-FS1-705.2.3

FS14–09/10
705.2.3

Proponent: Homer Maiel, PE, CBO, City of San Jose**,** representing ICC Tri-Chapter Peninsula, East Bay, Monterey Bay

Revise as follows:

705.2.3 Combustible projections. Combustible projections located where openings are not permitted or where protection of openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, fire-retardant-treated wood or as required by Section 1406.3.

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

Reason: In Table R302.1 of IRC, projections are allowed to be rated 1 hour construction when minimum fire separation distance is 2 feet to 5 feet (less than 2 feet no protection is allowed). IBC Table 705.8 indicates that protection of the openings are required from 3 feet to less than 5 feet. The exception in Section 705.2.3 is in conflict with IRC. Therefore, it is only prudent to delete this exception.

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

Analysis: Code change proposals FS12, FS13 and FS14 propose revisions to Section 705.2.3. The committee needs to make its intent clear with respect to these revisions.

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

ICCFILENAME: MAIEL-FS2-705.2.3.doc

FS15–09/10
705.3

Proponent: Gary Lampella, City of Redmond, OR, representing Oregon Building Officials Association

Revise as follows:

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

Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the *exterior wall* and opening protection of the existing building meet the criteria as set forth in Sections 705.5 and 705.8.

Exception: Two or more buildings on the same lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

Reason: This code change is to clarify that buildings on the same lot that are not considered one building. If one is concerned about wall and opening protection it stands to reason that projections also should be considered.

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

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

ICCFILENAME: LAMPELLA-FS3-705.3

FS16–09/10
705.5, 705.5.1 (New)

Proponent: Katherine Bang representing the City of Portland, Bureau of Development Services

Revise as follows:

705.5 Fire-resistance ratings. Exterior walls shall be fire-resistance rated in accordance with Tables 601 and 602 and this section. Where exterior walls are required to be fire-resistive, the fire rating shall be continuous from the foundation, through concealed spaces, to the top of the parapet or the underside of the roof sheathing or decking if no parapet is provided.

Exception: In the concealed space between the ceiling and the underside of the sheathing above, each layer of gypsum board on the interior side, is permitted to be substituted by an equivalent amount of fire blocking in accordance with Section 717.2.

705.5.1 Fire rating exposure. The required fire-resistance rating of exterior walls with a fire separation distance of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

Reason: The model code does not address continuity at exterior walls. Because continuity is noted at all other fire resistive walls, there is the suggestion that continuity is not required. With platform framing it is easy to lose the fire resistive rating at the intersection of the horizontal assemblies and the exterior wall. This revision seeks to remedy that misunderstanding.

This revision clarifies the intent of the code and also provides an alternative solution for maintaining continuity at the intersection of the horizontal assembly and the exterior wall.

Cost Impact: None - this is a clarification of code intent.

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

ICCFILENAME: BANG-FS1-705.5

FS17–09/10
705.6

Proponent: Sam Francis representing American Forest & Paper Association

Revise as follows:

705.6 Structural stability. The wall shall extend to the height required by Section 705.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required fire-resistance rating. Interior structural elements which brace the exterior wall but are not within the plane of the exterior wall nor on the outside of it shall have the fire resistance rating required by Table 601.

Reason: This section of the code is a direct descendent of the following section of the BOCA National Building Code which read in part:
Section 302.2.3 Method 3: The fire resistance rated wall shall be so constructed that it will remain structurally in place against an exterior exposing fire, for the duration of time indicated by the required fire resistance rating.

The 2006 IBC, Section 714.5, required all load-bearing structural members located within an exterior wall or exterior to it (outside of the exterior wall meaning outdoor side, not the enclosed side) to have the higher of the fire resistance ratings required for that element in:

(1) Table 601;
(2) Table 601 for the exterior bearing wall; or,
(3) Table 602 based upon fire separation distance.

It may be inferred from this requirement that load-bearing structural members located internally within the building need only have the fire resistance rating required of them in Table 601. The fire resistance ratings for exterior walls are based upon exterior exposure or conflagration. Thus, it is not reasonable to assume that because an interior element braces, to any extent, an exterior wall that it follows that the bracing element interior to that exterior wall must then have the same fire resistance rating as the exterior wall. The 2009 IBC has this requirement relocated to 705.6 and the base fire resistance requirements were "mixed with fire separation distance requirements" so the base requirement is not so readily discernable.

This proposal would clarify the intent of Section 705.6. It is clear that the code has a long standing provision which permits the various elements of a building for a given construction type to have differing fire resistance ratings based upon the function of the individual element and the duration of time deemed necessary for that element to continue to perform that function.

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

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

ICCFILENAME: FRANCIS-FS1-705.6

FS18–09/10
705.6

Proponent: Dennis Richardson PE, dbr group inc. representing self

Revise as follows:

705.6 Structural stability. The wall shall extend to the height required by Section 705.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required *fire-resistance rating*.

Exceptions:

1. Building elements providing out of plane structural stability for fire-resistance rated exterior walls shall be considered to remain in place for 2 hours if they are one hour fire resistance rated or heavy timber construction and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Building elements providing out of plane structural stability for fire-resistance rated exterior walls shall be considered to remain in place for 2 hours if they are one hour fire resistance rated or heavy timber construction and the building is equipped with an automatic sprinkler system in accordance with Section 903.3.1.2 or 903.3.1.3 and the fire-resistance rated exterior wall conforms with any of the conditions listed in the exception to Section 705.11 for parapets.
3. Building elements providing out of plane structural stability for fire-resistance rated exterior walls shall be considered to remain in place for 1 hour in construction that is not otherwise fire-resistance rated if the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
4. Building elements providing out of plane structural stability for fire-resistance rated exterior walls shall be considered to remain in place for 1 hour in construction that is not otherwise fire-resistance rated if the

building equipped with an automatic sprinkler system in accordance with Section 903.3.1.2 or 903.3.1.3 and the fire-resistance rated exterior wall conforms with any of the conditions listed in the exception to Section 705.11 for parapets.

Reason: Section 705.6 which requires structural stability of exterior fire resistance rated walls is rarely, if ever, enforced because it provides no criteria for "sufficient structural stability" and does not consider protection to supporting elements provided in part by automatic sprinkler systems and partially by passive fire resistance. An informal phone survey of a number of building officials and code consultants including review of numerous interpretation manuals did little to shed light on the application of this section. Lack of enforcement and a wide range of interpretations justifies this section needs to be clarified or removed from the code.

The proposed exceptions are superior to the existing code language because they provide a prescriptive way to address the intent of this code section giving credit to the combination of fire sprinklers and passive fire resistance of one hour fire restive or heavy timber construction. Credit is given for NFPA 13 systems referenced in 903.3.1.1 and NFPA 13R or 13D systems referenced in 903.3.1.2 or 903.3.1.3 of the IBC.

Footnote c. of Table 601 refers to heavy timber construction as an equivalent to one hour fire resistance rated construction.

Footnote d. of table 601 allows non rated construction with a NFPA 13 sprinkler system throughout to be substituted for 1-hour fire-resistance rated construction provided the system is not otherwise required by the other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. Footnote c. goes on to state the 1-hour substitution for the fire resistance of exterior walls is not permitted.

This proposed code change does not provide an exception to the fire resistance rating for the exterior wall itself or for the elements providing vertical support of the wall. The code proposal only clarifies the anticipated effectiveness and required protection of secondary structural elements providing out of plane stability for the fire resistance rated exterior wall. As such the proposed use of the proposed exceptions would not disqualify the use of sprinklers for allowable area or height increases.

This proposed code change relies on NFPA 13R and 13D sprinkler systems when used for residential construction. It is acknowledged these systems are based on lower water flow than a NFPA 13 system and do not require sprinkler heads in attic areas. However residential construction typically is highly compartmentalized typically with one hour construction between multi-family units and noncombustible interior finish materials and a great deal of structural redundancy. Because of the lack of sprinkler heads in attic areas, the proposed exceptions as written for 13R and 13D systems only apply if the fire-resistance rated exterior wall conforms with any of the conditions listed in the exception to Section 705.11 for elimination of parapets. These exceptions for parapets either rely on additional passive fire resistance in lieu of a parapet or are limited by size or location of the structure.

In addition to this change, a proposal is also being submitted to add Section 1604.14 to establish out of plane structural design criteria for the instances where these exceptions would not apply.

The author of this proposed code change acknowledges there is little data or full scale research to specifically address this issue however the current code language provides absolutely no basis or guidance whatsoever as to the intent or application of this code section. Because of the wide variety of configurations materials and conditions and the need to show performance of structural stability during a wide variety of fire conditions, it is not clear how a structural engineer would provide a rational analysis if requested under the present code language.

Because of this Section 705.6 appears to be almost universally ignored by designers and code officials alike. At a minimum, this code change proposal is intended to provide a reasonable basis (or at minimum a starting point for a healthy discussion) for consistent application and enforcement acknowledging the contributions of both active systems and passive fire-resistance construction.

Cost Impact: Since the proposed code change incorporates exceptions to be utilized if desired by the designer, it is anticipated this change would result in a cost savings.

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

ICCFILENAME: RICHARDSON-FS1-705.6

FS19–09/10
705.8.1

Proponent: Catherine Heeb, City of Portland Bureau of Development Services

Revise as follows:

705.8.1 Allowable area of Openings. The maximum area of unprotected or protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 705.8. Openings shall be proportionally spaced along the length of the story.

Exceptions:

(Exceptions remain unchanged)

Reason: The additional text clarifies the intent of the model code language. Without this clarification, openings in a story may be concentrated in one area, leading to a higher percentage of opening in one area than would otherwise be allowed.

The added text codifies the assumption that is explained in the ICC publication 2006 International Building Code - Code and Commentary, which states, "The table is based on a formula that was developed under the following assumptions: …3. the exterior openings are equally spaced and distributed in the wall."

The even spread of openings in a story ensures that all portions of the building will be adequately protected and improves the safety of the occupants.

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

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

ICCFILENAME: Heeb-FS1-705.8

FS20–09/10
705.8.6

Proponent: Homer Maiel, PE, CBO, City of San Jose**,** representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay)

Revise as follows:

705.8.6 Vertical exposure. Opening protectives of buildings shall comply with this section.

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

Exceptions:

1. Opening protectives are not required where the roof assembly of the adjacent building or structure has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the exterior wall facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour.
2. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with Section 705.8.6.1.

705.8.6.2 Vertical exposure for buildings on separate lots. When a new building or an addition is to be erected adjacent to an existing building, all openings in the exterior wall of the new building or addition are required to be not less than ¾ hour protectives when these openings are less than 15' vertically above the roof of the existing building or structure. The opening protectives are required where the distance between buildings or structures is less than 15' feet. When the roof of the new building or an addition is at lower elevation from the existing building, the roof construction of the new building or the addition shall have fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the exterior wall facing the existing building and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly shall have a fire-resistance rating of not less than 1 hour. The roof protections are required where the distance between the buildings or structures is less than 15' feet.

Reason: A fire in a lower building that is adjacent to a taller building can be a source of fire exposure to openings in the taller building. Since fire does not differentiate between buildings on same lot or separate adjacent lots, the existing provisions for buildings on the same lot need to be expanded to cover buildings on separate lots too. The requirements for the buildings on the separate lots should not be different from those on the same lot. The buildings on the same lots are under one ownership and the imaginary property lines can be moved so that it will serve all buildings in the most efficient way.

On the other hand, the buildings on separate lots are under different ownerships. The property lines are legal property lines and can not be moved around. An existing building on one site should not dictate the design and construction of the future building nor a future building should not alter the design and construction of an existing building. In other words, between two neighboring buildings, whichever is built last will need to comply with requirements of this section. The 15-foot separation requirement between buildings on the separate lots, is consistent with the same requirement for buildings on the same lot.

Also not to leave out the additions to existing buildings, additions are also included in these requirements. So for the sake of argument, imagine that there are two existing buildings, with same height, on separate lots. If one building is adding more stories, then these requirements could apply to the windows of new stories.

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

Analysis: Code change proposals FS20 and FS21 propose similar requirements for vertical exposure for buildings on separate lots. The committee needs to make its intent clear with respect to these revisions.

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

ICCFILENAME: MAIEL-FS3-705.8.6.doc

FS21–09/10
705.8.6, 705.8.6.1 (New), 705.8.6.2 (New)

Proponent: Gary Lampella, City of Redmond, Oregon, representing: Oregon Building Officials Association

Revise as follows:

705.8.6 Vertical exposure. Opening protectives of buildings shall comply with this section.

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

Exceptions:

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

705.8.6.2 Vertical exposure for buildings on separate lots. When a new building is to be erected adjacent to an existing building, all openings in the exterior wall of the new building are required to be not less than ¾ hour when these openings are less than 15 feet (4572 mm) vertically above the roof of existing building or structure. The opening protectives are required where the distance between the buildings or structures is less than 15 (4572 mm) feet. When the roof of the new building is at lower elevation from the existing building, the roof construction of the new building shall have fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the exterior wall facing the new building and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly shall have a fire-resistance rating of not less than 1 hour. The roof protections are required where the distance between the buildings or structures is less than 15 feet (4572 mm).

Reason: I was the original proponent in Palm Springs of a similar proposal that was approved by the Fire Safety Committee. The Committee agreed that buildings with a real property line should be treated the same as two buildings on the same lot in regards to vertical fire exposure. In Minneapolis there was a Public Comment submitted pointing out some flaws in the code change. Rather than attempt to keep it in the code I opted to ask ICC staff to simply withdraw it and I would work with the author of the Public Comment and come back with a new proposal in Baltimore.

The purpose of this submittal is clean up inconsistent provisions between buildings on the same lot with an imaginary line for fire separation distance and the lack of the same provision for buildings on adjacent lots with real property lines. The purpose of assuming an imaginary line between buildings on the same lot is to mirror the fire separation distance of those buildings with actual property lines and determining opening and wall protection. Currently, the provisions of buildings on the same lot with an imaginary line have more restrictive requirements than those buildings with a real line.

If one is concerned about fire spread from one building to another, should the provisions be the same for a real lot line as opposed to an imaginary one? Yes, we believe so. The probability of a fire spreading from one building to another via openings and fire separation distance to other buildings is the same regardless of real or imaginary lines. Based on the current code language, we can only assume that a recorded property line somehow adds an additional level of protection over and above an imaginary one.

We have divided this Section into three parts now. We are proposing to delete the language “imaginary line and the adjacent” in the Section 704.8.6.1 because it only addresses the fire separation for one building and ignores the other. There are many reasons to have fire separation from an imaginary line at different place and one building may have less than 15 feet of fire separation distance and the other may have 20. In this case the lower roof would be required to have a 1 hour roof assembly, which doesn’t make sense. The reference to “fire separation” is being deleted because we believe the crucial distance is the true distance between the buildings, which clears up the confusion over where the measurement is taken. We have also added the word “lower” in the first exception to make it clear that it is the lower roof that is required to be of 1 hour fire-resistive construction. Lastly, we have created a new Subsection 704.8.6.2 to address buildings and structures with real property lines.

Cost Impact: The code change proposal will not increase the cost of construction. There could be some minimal costs in providing the 1 hour roof assemblies.

Analysis: Code change proposals FS20 and FS21 propose similar requirements for vertical exposure for buildings on separate lots. The committee needs to make its intent clear with respect to these revisions.

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

ICCFILENAME: LAMPELLA-FS2-704.8.6

FS22–09/10
705

Proponent: Sarah A. Rice, CBO, representing self

Revise as follows:

SECTION 705 EXTERIOR WALLS

705.1 General. All e*xterior walls* shall comply with this section.

(Section 705.2 relocated to Section 705.9)

(Section 705.3 relocated to Section 705.4.1)

705.2 ~~705.4~~ Materials. *Exterior walls* shall be of materials permitted by the building type of construction.

705.3 ~~705.6~~ Structural stability. The wall shall extend to the height required by Section 705.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required *fire-resistance rating*.

705.4 Fire-resistance ratings – where required. *Exterior walls* shall be fire-resistance rated in accordance with Tables 601 and 602.

705.4.1 ~~705.3~~ Buildings on the same lot. For the purposes of determining the required wall and opening protection and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them. Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the *exterior wall* and opening protection of the existing building meet the criteria as set forth in Sections 705.5 and 705.8.

> **Exception:** Two or more buildings on the same lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

705.5 Fire-resistance rated exterior walls. Exterior walls required to have a fire resistance rating shall comply with this Sections 705.5.1 through 705.5.4.

705.5.1 ~~705.5~~ Fire-resistance ratings. ~~*Exterior walls* shall be fire-resistance rated in accordance with Tables 601 and 602 and this section.~~ The required *fire-resistance rating* of *exterior walls* with a *fire separation distance* of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required *fire-resistance rating* of *exterior walls* with a *fire separation distance* of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

705.5.2 ~~705.7~~ Unexposed surface temperature. *(No change to text)*

FIGURE 705.5.2 ~~705.7~~
EQUIVALENT OPENING FACTOR
(No change to Figure)

705.5.3 ~~705.9~~ Joints. *(No change to text)*

705.5.3.1 ~~705.9.1~~ Voids. *(No change to text)*

705.5.4 ~~705.10~~ Ducts and air transfer openings. *(No change to text)*

705.5.5 Penetrations. Penetrations of fire-resistance rated exterior walls shall comply with Section 713

705.5.6 Openings. Openings in fire-resistance rated exterior walls shall comply with Section 705.7

705.6 Nonfire-resistance rated exterior walls. Exterior walls not required to have a fire resistance rating shall comply with this Sections 705.6.1 through 705.6.3.

705.6.1 Joints. Joints made in or between nonfire-resistance rated exterior walls are not required to be protected.

705.6.2 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in nonfire-resistance-rated exterior walls are not required to have protected openings

705.5.5 Penetrations. Penetrations of nonfire-resistance rated exterior walls shall comply with Section 713

705.5.6 Openings. Openings in nonfire-resistance rated exterior walls shall comply with Section 705.7

705.7 ~~705.8~~ Openings. Openings in fire-resistance rated and nonfire-resistance rated *exterior walls* shall comply with Sections 705.8.1 through 705.8.6.

705.7.1 ~~705.8.1~~ Allowable area of openings. *(No change to text)*

705.7.2 ~~705.8.2~~ Protected openings. *(No change to text)*

705.7.3 ~~705.8.3~~ Unprotected openings. *(No change to text)*

TABLE 705.7 ~~705.8~~
MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION
(No change to Table)

705.7.4 ~~705.8.4~~ Mixed openings. *(No change to text)*

705.7.5 ~~705.8.5~~Vertical separation of openings. *(No change to text)*

705.7.6 ~~705.8.6~~ Vertical exposure. *(No change to text)*

705.8 ~~705.11~~ Parapets. . *(No change to text)*

705.8.1 ~~705.11.1~~ Parapet construction. *(No change to text)*

705.9 ~~705.2~~ Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the *exterior wall* shall conform to the requirements of this section and Section 1406. Exterior egress balconies and *exterior exit stairways* shall also comply with Sections 1019 and 1026, respectively. Projections shall not extend beyond the distance determined by the following three methods, whichever results in the lesser projection:

1. A point one-third the distance from the exterior face of the wall to the *lot line* where protected openings or a combination of protected and unprotected openings are required in the *exterior wall*.
2. A point one-half the distance from the exterior face of the wall to the *lot line* where all openings in the *exterior wall* are permitted to be unprotected or the building is equipped throughout with an *automatic sprinkler system* installed under the provisions of Section 705.8.2.
3. More than 12 inches (305 mm) into areas where openings are prohibited. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.

705.9.1 ~~705.2.1~~ Type I and II construction. Projections from walls of Type I or II construction shall be of noncombustible materials or combustible materials as allowed by Sections 1406.3 and 1406.4.

705.9.2 ~~705.2.2~~ Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any *approved* material.

705.9.3 ~~705.2.3~~ Combustible projections. Combustible projections located where openings are not permitted or where protection of openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, *fire-retardant-treated wood* or as required by Section 1406.3.

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

Reason: This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits.

Chapter 7 is currently titled "Fire and Smoke Protection Features" and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies.

Through a series of code changes, including tone, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change address Section 705 Exterior Walls. While currently the provisions contained in Section 705 seem to only apply to fire-resistance rated exterior wall assemblies, the general statement in 705.1 says "Exterior walls shall comply…" not just "Fire resistance rated exterior walls shall comply…" and upon closer look at the opening protective requirements, and how the user is directed to use Table 705.8 elsewhere in the code, it can be seen that the table regulates openings in both fire-resistance rated and nonfire-resistance rated exterior walls. This proposal just makes it clear that the entire section applies to both fire-resistance rated and non -resistance rated exterior walls.

The majority of technical provisions are unchanged, and are noted as such. The following outlines the major changes to Section 705:

Re-arrangement of sections to present order consistent with other "wall" sections in Chapter 7

Move Section 705.2 towards end of section

Bring provisions applicable to all exterior walls to the beginning of the section.

Correlation of terminology to acknowledge that there are now 5 types of "holes" addressed by the code – openings, penetrations, joints, air-transfer openings and duct openings.

Addition of new sections for penetrations and openings in fire rated and nonfire- rated exterior walls are to be addressed.

References within sections have not been correlated. ICC Staff has indicated that if accepted this would be done editorially.

For clarity the entire text of Section 705 is shown below.

SECTION 705 EXTERIOR WALLS

705.1 General. All *exterior walls* shall comply with this section.

705.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the *exterior wall* shall conform to the requirements of this section and Section 1406. Exterior egress balconies and *exterior exit stairways* shall also comply with Sections 1019 and 1026, respectively. Projections shall not extend beyond the distance determined by the following three methods, whichever results in the lesser projection:

1. A point one-third the distance from the exterior face of the wall to the *lot line* where protected openings or a combination of protected and unprotected openings are required in the *exterior wall*.
2. Apoint one-half the distance from the exterior face of the wall to the *lot line* where all openings in the *exterior wall* are permitted to be unprotected or the building is equipped throughout with an *automatic sprinkler system* installed under the provisions of Section 705.8.2.
3. More than 12 inches (305 mm) into areas where openings are prohibited. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.

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

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

705.2.3 Combustible projections. Combustible projections located where openings are not permitted or where protection of openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, *fire-retardant-treated wood* or as required by Section 1406.3.

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

705.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them. Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the *exterior wall* and opening protection of the existing building meet the criteria as set forth in Sections 705.5 and 705.8.

Exception: Two or more buildings on the same lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

705.2 705.4 Materials. *Exterior walls* shall be of materials permitted by the building type of construction.

705.3 (IBC 2009 705.6) Structural stability. The wall shall extend to the height required by Section 705.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required *fire-resistance rating*.

705.4 Fire-resistance ratings – where required. *Exterior walls* shall be fire-resistance rated in accordance with Tables 601 and 602.

705.4.1 (IBC 2009 705.3) Buildings on the same lot. For the purposes of determining the required wall and opening protection and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them. Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the *exterior wall* and opening protection of the existing building meet the criteria as set forth in Sections 705.5 and 705.8.

Exception: Two or more buildings on the same lot shall either be regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.

705.5 Fire-resistance rated exterior walls. Exterior walls required to have a fire resistance rating shall comply with this Sections 705.5.XX through 705.5.XX

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

705.6 Structural stability. The wall shall extend to the height required by Section 705.11 and shall have sufficient structural stability such that it will remain in place for the duration of time indicated by the required *fire-resistance rating*.

705.5.2 705.7 Unexposed surface temperature. Where protected openings are not limited by Section 705.8, the limitation on the rise of temperature on the unexposed surface of *exterior walls* as required by ASTM E 119 or UL 263 shall not apply. Where protected openings are limited by Section 705.8, the limitation on the rise of temperature on the unexposed surface of *exterior walls* as required by ASTM E 119 or UL 263 shall not apply provided that a correction is made for radiation from the unexposed *exterior wall* surface in accordance with the following formula:

$Ae = A + (Af \cdot Feo)$ **(Equation 7-1)**

where:

Ae = Equivalent area of protected openings.

A = Actual area of protected openings.
Af = Area of *exterior wall* surface in the *story* under consideration exclusive of openings, on which the temperature limitations of ASTME 119 or UL 263 for walls are exceeded.
Feo = An "equivalent opening factor" derived from Figure 705.7 based on the average temperature of the unexposed wall surface and the *fire-resistance rating* of the wall.

FIGURE 705.3.3 705.7 - [Unchanged]
705.5.3 705.9 Joints. Joints made in or between *exterior walls* required by this section to have a *fire-resistance rating* shall comply with Section 714.
Exception: Joints in *exterior walls* that are permitted to have unprotected openings.
705.5.3 705.9.1 Voids. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.
705.5.4 705.10 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in fire-resistance-rated *exterior walls* required to have protected openings shall comply with Section 716.
Exception: Foundation vents installed in accordance with this code are permitted.
705.5.5 Penetrations other than joints, ducts and air-transfer openings. Penetrations made into or thorugh fire-resistance rated exterior walls shall comply with Section 705.XXXX
705.6 Nonfire-resistance rated exterior walls. Exterior walls not required to have a fire resistance rating shall comply with this Sections 705.6.XX through 705.6.XX
705.6.1 Joints. Joints made in or between nonfire-resistance rated exterior walls are not required to be protected.
705.6.2 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in nonfire-resistance-rated exterior walls are not required to have protected openings
705.6.3 Penetrations other than joints, ducts and air-transfer openings. Penetrations made into or thorugh nonfire-resistance rated exterior walls shall comply with Section 705.XXXX
705.7 705.8 Openings. Openings in fire-resistance rated and nonfire-resistance rated *exterior walls* shall comply with Sections 705.8.1 through 705.8.6.
705.7.1 705.8.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an *exterior wall* in any *story* of a building shall not exceed the percentages specified in Table 705.8.
Exceptions:
1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first *story* above grade either:
1.1. Where the wall faces a street and has a *fire separation distance* of more than 15 feet (4572 mm); or
1.2. Where the wall faces an unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall not be less than 30 feet (9144 mm) in width and shall have access from a street by a posted fire lane in accordance with the *International Fire Code*.
2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.
705.7.2 705.8.2 Protected openings. Where openings are required to be protected, *fire doors* and fire shutters shall comply with Section 715.4 and *fire window assemblies* shall comply with Section 715.5.
Exception: Opening protectives are not required where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 and the exterior openings are protected by awater curtain using automatic sprinklers *approved* for that use.
705.7.3 705.8.3 Unprotected openings. Where unprotected openings are permitted, windows and doors shall be constructed of any *approved* materials. Glazing shall conform to the requirements of Chapters 24 and 26.
TABLE 705.7 705.8 - [Unchanged]
705.7.4 705.8.4 Mixed openings. Where both unprotected and protected openings are located in the *exterior wall* in any *story* of a building, the total area of openings shall be determined in accordance with the following:
(*Ap*/ *ap*) + (*Au*/*au*) ≤ 1 **(Equation 7-2)**
where:
Ap = Actual area of protected openings, or the equivalent area of protected openings, *Ae* (see Section 705.7).
ap = Allowable area of protected openings.
Au = Actual area of unprotected openings.
au = Allowable area of unprotected openings.
705.7.5 705.8.5Vertical separation of openings. Openings in *exterior walls* in adjacent *stories* shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower *story* is not a protected opening with a *fire protection rating* of not less than 3/4 hour. Such openings shall be separated vertically at least 3 feet (914 mm) by spandrel girders, *exterior walls* or other similar assemblies that have a *fire-resistance rating* of at least 1 hour or by flame barriers that extend horizontally at least 30 inches (762 mm) beyond the *exterior wall*. Flame barriers shall also have a *fire-resistance rating* of at least 1 hour. The unexposed surface temperature limitations specified in ASTM E 119 or UL 263 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code.
Exceptions:
1. This section shall not apply to buildings that are three *stories* or less above *grade plane*.
2. This section shall not apply to buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Open parking garages.
705.7.6 705.8.6 Vertical exposure. For buildings on the same lot, opening protectives having a *fire protection rating* of not less than 3/4 hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the *fire separation distance* between the imaginary line and the adjacent building or structure is less than 15 feet (4572 mm).
Exceptions:
1. Opening protectives are not required where the roof assembly of the adjacent building or structure has a *fire-resistance rating* of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the *exterior wall* facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a *fire-resistance rating* of not less than 1 hour.
2. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with Section 705.8.6.
705.9 Joints. Joints made in or between *exterior walls* required by this section to have a *fire-resistance rating* shall comply with Section 714.
Exception: Joints in *exterior walls* that are permitted to have unprotected openings.
705.9.1 Voids. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.

705.10 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in fire-resistance-rated *exterior walls* required to have protected openings shall comply with Section 716.
Exception: Foundation vents installed in accordance with this code are permitted.
705.8 705.11 Parapets. Parapets shall be provided on *exterior walls* of buildings.
Exceptions: A parapet need not be provided on an *exterior wall* where any of the following conditions exist:
1. The wall is not required to be fire-resistance rated in accordance with Table 602 because of *fire separation distance*.
2. The building has an area of not more than 1,000 square feet (93 m2) on any floor.
3. Walls that terminate at roofs of not less than 2-hour fire-resistance-rated construction or where the roof, including the deck or slab and supporting construction, is constructed entirely of noncombustible materials.
4. One-hour fire-resistance-rated *exterior walls* that terminate at the underside of the roof sheathing, deck or slab, provided:
4.1. Where the roof/ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction for a width of 4 feet (1220 mm) for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
4.2. Where roof/ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction.
4.3. Openings in the roof shall not be located within 5 feet (1524 mm) of the 1-hour fire-resistance-rated *exterior wall* for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
4.4. The entire building shall be provided with not less than a Class B roof covering.
5. In Groups R-2 and R-3 where the entire building is provided with a Class C roof covering, the *exterior wall* shall be permitted to terminate at the underside of the roof sheathing or deck in Type III, IV and V construction, provided:
5.1. The roof sheathing or deck is constructed of *approved* noncombustible materials or of *fire-retardant-treated wood* for a distance of 4 feet (1220 mm); or
5.2. The roof is protected with 0.625-inch (16 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by a minimum of nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members for a minimum distance of 4 feet (1220 mm).
6. Where the wall is permitted to have at least 25 percent of the *exterior wall* areas containing unprotected openings based on *fire separation distance* as determined in accordance with Section 705.8.
705.8.1 705.11.1 Parapet construction. Parapets shall have the same *fire-resistance rating* as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials.
The height of the parapet shall not be less than 30 inches (762 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than two units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a *fire separation distance* where protection of wall openings is required, but in no case shall the height be less than 30 inches (762 mm).
705.9 (2009 IBC 705.2) Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the *exterior wall* shall conform to the requirements of this section and Section 1406. Exterior egress balconies and *exterior exit stairways* shall also comply with Sections 1019 and 1026, respectively. Projections shall not extend beyond the distance determined by the following three methods, whichever results in the lesser projection:
1. A point one-third the distance from the exterior face of the wall to the *lot line* where protected openings or a combination of protected and unprotected openings are required in the *exterior wall*.
2. Apoint one-half the distance from the exterior face of the wall to the *lot line* where all openings in the *exterior wall* are permitted to be unprotected or the building is equipped throughout with an *automatic sprinkler system* installed under the provisions of Section 705.8.2.
3. More than 12 inches (305 mm) into areas where openings are prohibited. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section.
705.9.1 Type I and II construction. Projections from walls of Type I or II construction shall be of noncombustible materials or combustible materials as allowed by Sections 1406.3 and 1406.4.
705.9.2 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any *approved* material.
705.9.3 Combustible projections. Combustible projections located where openings are not permitted or where protection of openings is required shall be of at least 1-hour fire-resistance-rated construction, Type IV construction, *fire-retardant-treated wood* or as required by Section 1406.3.
Exception: TypeV construction shall be allowed for R-3 occupancies.

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-FS1b-705

FS23–09/10
706.2, Chapter 35

Proponent: Sarah A. Rice, CBO, representing self

1. Revise as follows:

706.2 Structural stability. Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating or shall be double fire walls constructed in accordance with NFPA 221.

2. Add new standard to Chapter 35 as follows:

NFPA	
221-09	Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls, 2009 Edition

Reason: To allow what today would be considered a design using 2 exterior walls to be classified as a fire wall and thus also allowed to have openings when the wall is not located on a lot line (party wall).

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

Analysis: A review of the standard proposed for inclusion in the code, NFPA 221-09, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: RICE-FS4-706.2

FS24–09/10

702.1, 705.6, 706.2, 706.2.1 (New), 706.2.2 (New), 706.2.3 (New), 706.4, Table 706.X (New)

Proponent: Marshall P. Carman, Structural Engineers Association of Ohio

Revise as follows:

702.1 Definitions

FIRE WALL. A fire-resistance rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof ~~with sufficient structural stability under fire conditions to allow.~~ designed to safely support loads as required by Chapter 16 following collapse of construction on either side. ~~without collapse of the wall.~~

Fire wall, cantilevered. Self supporting fire wall which is independent from construction on either side of the fire wall.

Fire wall, double. Two independent parallel walls meeting the exterior wall requirements of section 705 and having an equivalent combined assembly fire-resistance rating equal to the required fire-resistance rating.

Fire wall, tied. Fire wall connected to a diaphragm on both sides of the wall, with the fire wall relying on the diaphragm on either side for structural support, but not at the same time.

705.6 Structural ~~stability~~ requirements. The wall shall extend to the height required by Section 705.11 and shall ~~have sufficient structural stability such that it will remain in place for~~ be designed to safely support loads as required by Chapter 16 for the duration of time indicated by the required fire-resistance rating

706.2 Structural ~~stability~~ requirements. ~~Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of time indicated by the required fire-resistance rating.~~ *Fire walls* shall be designed to safely support loads as required by Chapter 16 for the duration of time indicated by the required fire-resistance rating, assuming collapse of construction due to fire on either side of the wall. For application of wind loads and lateral live loads, it is permitted to consider the portions of the fire wall that are interior prior to assumed collapse as interior walls after assumed collapse. Load combinations with earthquake loading need not be considered after assumed collapse. Fire walls shall meet the additional requirements of 706.2.1, 706.2.2, or 706.2.3.

706.2.1 Tied fire walls. Tied fire walls and supporting structure opposite of the assumed collapse of construction, shall resist an applied lateral load induced by collapse of construction on either side of the wall. Lateral loads applied to the wall and supporting structure due to collapse are permitted to be determined in accordance with equation 7-2 provided both of the following conditions are met.

1. Framing supported by the fire wall is detailed to permit rotation of the framing element at the fire wall support.
2. Framing, other than tension ties, is not continuous through the fire wall

$$h_f = 1.5 a l \qquad \textbf{(Equation 7-2)}$$

Where:

h_f = lateral load applied at framing support

l = span of framing perpendicular to fire wall
ω = equivalent uniform applied gravity load to framing member

The applied lateral load due to collapse need not exceed the maximum force that can be developed in the system.

Construction on both sides of the fire wall shall be considered a single structure for structural design and analysis.
(Renumber subsequent equations)

706.2.2 Cantilevered fire walls. Separation between a cantilevered fire wall and building elements on all sides shall meet the requirements of 1613.6.7.

706.2.3 Double fire walls. Each wall of a double fire wall shall be considered an exterior wall as required by section 705. Construction on either side of the fire wall shall be considered separate structures and shall meet the building separation requirements of 1613.6.7.

706.4 Fire-resistance rating. *Fire walls* shall have a fire-resistance rating of not less than that required by table 706.4(1). Double fire walls shall be considered to have an equivalent combined fire resistance rating as specified in table 706.4(2).

TABLE 706.4(1)
FIRE WALL FIRE-RESISTANCE RATINGS

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

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

Add new Table as follows:

TABLE 706.4(2)
EQUIVALENT COMBINED FIRE-RESISTANCE RATING FOR DOUBLE FIRE WALLS.

Required fire-resistance rating for each wall of a double fire wall (hours)	Equivalent single wall fire-resistance rating (hours)
3	4
2	3
1	2

Reason: The language of Section 706.2 requires that fire walls have sufficient structural stability to prevent collapse of the fire wall under fire conditions. However, there is no definition of *sufficient structural stability* or design loads provided for fire conditions. While this provides a legitimate performance goal, it is inconsistent with typical structural code requirements which require specific resistance against defined loading.

This code change proposal attempts to clearly define loading and resistance requirements for fire walls, reference already defined strength and stability requirements in chapter 16, as well as clarify / define types of firewalls.

A provision has been added permitting the application of interior lateral live loads on fire walls based upon their condition prior to collapsed construction on either side of the wall. NFPA 221 applies 5psf for the lateral design load on fire walls, which is also the typical lateral live load applied to interior walls per 1607.13.

The types of fire walls are typical walls defined in NFPA 221. NFPA 221 provides an equation for determining the lateral load applied to a tied fire wall, which is based upon a catenary action due to sagging of the member. The equation provided in this proposal is based upon the horizontal reaction due the centripetal force of a swinging member that lost support at the far end. While lateral loads due to catenary action are possible, the horizontal reaction due to centripetal force provides a larger horizontal load than the catenary action equation provided in NFPA 221.

Reference:
NFPA 221, Standard for High Challenge Fire Walls, Fire Walls and Fire Barrier Walls (2009 Edition). National Fire Protection Association (NFPA)

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

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

ICCFILENAME: CARMAN-FS1-702.1

FS25–09/10
706.3.1 (New)

Proponent: Jason Thompson, National Concrete Masonry Association, representing the Masonry Alliance for Codes and Standards

Add new text as follows:

706.3 Materials. *Fire walls* shall be of any *approved* noncombustible materials.

Exception: Buildings of Type V construction.

706.3.1 Sources of ignition. Where fire walls are constructed of combustible structural elements in buildings of Type V construction, potential sources of ignition of the combustible structural elements shall not be permitted within the interior of the fire wall assembly.

Reason: Combustible fire walls may be fire tested in accordance with ASTM E119 to achieve the minimum required fire resistance rating specified in Table 706.4 for the appropriate application. However, the combustible framing elements and combustible materials used to construct the fire wall would still be subjected to burning if they become ignited by an ignition source located within the fire wall cavity. Typical examples of ignition sources include gas vents, dryer vents, hot water piping, electrical wiring, electrical receptacles, switches, equipment and other electrical components. The purpose of this code change proposal is to prohibit the installation of potential ignition sources within the wall cavities of fire walls constructed of combustible structural elements where allowed by the Exception to Section 706.3. The same risk of fire from these sources is not inherent in fire walls constructed of noncombustible materials since there are no combustible materials to ignite even though the wall cavities of such fire walls may contain potential ignition sources.

Another reason for this change is to strengthen the level of performance for fire walls constructed using combustible materials. Fire walls are intended to create separate buildings. Because they are required to be structurally stable and remain in place if the building on either side of the fire wall should collapse due to a fire, it follows that they should not be subject to burning and subsequent collapse caused by a fire originating within the cavity of the fire wall. Therefore, wherever combustible structural elements are used to construct a fire wall, ignition sources should be prohibited so that the structural integrity and fire resistance rating of the fire wall will not be compromised.

Finally, the ASTM E119 test procedure does not have an ignition resistance component in the cavities of fire rated walls constructed of combustible materials. To address the structural reliability of fire walls constructed of combustible structural materials the building code needs to set limits on the potential for the internal ignition of those combustible components and the subsequent degradation of the fire wall. If a fire occurs within the fire wall, it needs to be able to perform its intended function. Limiting potential sources of ignition should be required to achieve this goal.
Cost Impact: The code change proposal will increase the cost of construction.

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

ICCFILENAME: Thompson-FS1-706.3.1

FS26–09/10
706.5

Proponent: Rick Lupton, City of Seattle, representing Seattle Dept of Planning & Development

Revise as follows:

706.5 Horizontal continuity. *Fire walls* shall be continuous from *exterior wall* to *exterior wall* and shall extend at least ~~18 inches (457 mm) beyond the exterior surface of *exterior walls*~~ to the interior surface of exterior sheathing or siding.

~~Exceptions:~~

1. ~~*Fire walls* shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided the *exterior wall* has a *fire-resistance rating* of at least 1 hour for a horizontal distance of at least 4 feet (1220 mm) on both sides of the *fire wall*. Openings within such *exterior walls* shall be protected by opening protectives having a *fire protection rating* of not less than 3/4 hour.~~
2. ~~*Fire walls* shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided the sheathing, siding, or other exterior noncombustible finish extends a horizontal distance of at least 4 feet (1220 mm) on both sides of the *fire wall*.~~
3. ~~*Fire walls* shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the *fire wall* is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.~~

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

1. The *exterior walls* on both sides of the *fire wall* shall have a 1-hour *fire-resistance rating* with ~~3/4-~~hourprotection ~~where opening protection is required by Section 705.8~~. The *fire-resistance rating* of the *exterior wall* shall extend a minimum of 4 feet (1220 mm) on each side of the intersection of the *fire wall* ~~to~~ with the *exterior wall*. ~~*Exterior wall* intersections at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad) do not need *exterior wall* protection.~~
2. Buildings or spaces on both sides of the intersecting *fire wall* shall be assumed to have an imaginary *lot line* at the *fire wall* and extending beyond the exterior of the *fire wall*. The location of the assumed line in relation to the *exterior walls* and the *fire wall* shall be such that the *exterior wall* and opening protection meet the requirements set forth in Sections 705.5 and 705.8. ~~Such protection is not required for *exterior walls* terminating at *fire walls* that form an angle equal to or greater than 180 degrees (3.14 rad).~~

   Exception: Exterior wall and opening protection is not required on each side of the intersection where any of the following apply:

   1. Where exterior wall intersections at fire walls form an angle equal to or greater than 180 degrees (3.14 rad).
   2. Where the fire wall extends at least 18 inches (457 mm) beyond the exterior surface of exterior walls.
   3. Where noncombustible exterior sheathing, exterior siding or other noncombustible exterior finish extends a horizontal distance of at least 4 feet (1220 mm) on both sides of the *fire wall*.
   4. Where noncombustible exterior sheathing, exterior siding or other noncombustible exterior finish is provided and the building on each side of the *fire wall* is protected by an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.

~~**706.5.2**~~ **706.5.1 Horizontal projecting elements.** *(No change to text)*

Reason: This proposal is intended to be editorial only, with no substantive technical changes. The existing code language is confusing because the exceptions to Sec. 706.5 and Sec. 706.5.1 both regard the intersection of a fire wall with an exterior wall and as a result appear to have conflicting requirements rather than the conditional requirements intended. Additionally, the 18-inch fire wall extension at exterior walls is generally avoided and should be an alternative option instead.

The proposal combines continuity and exterior wall intersections, the exceptions related solely to omission of wall protectives

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

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

ICCFILENAME: LUPTON-FS1-706.5

FS27–09/10
706.6, 706.6.2 (New)

Proponent: Homer Maiel, PE, CBO, City of San Jose**,** representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay)

Revise as follows:

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

Exceptions:

(Exceptions 1 through 5 remain unchanged)

6. Buildings with sloped roof in accordance with Section 706.6.2

Add new text as follows:

706.6.2 Buildings with sloped roofs. Where a fire wall serves as an interior wall for a building, and the roof on one side or both sides of the fire wall, slopes toward the fire wall at a slope greater than two units vertical in 12 units horizontal (2:12), the fire wall shall extend to a height equal to the height of the roof located 4 feet from the fire wall plus 30 inches. In no case shall the extension of the fire wall be less than 30 inches.

Reason: The Code fails to address the vertical continuity of fire walls at sloped roofs when fire wall serves as an interior wall. Since the parapet construction at the exterior walls (Section 705.11.1) is dependent on fire separation and protection of wall openings, this new Section (706.6.2) is needed to be structured differently. To achieve this, parts of Section 705.11.1 and Section 705.11, Exception 4 have been combined. By implementing this code proposal the height of the parapet could vary from 42" (for roofs with slopes of 3:12) to 6'-6" (for roofs with slope of 12:12). This is comparable with parapet heights that would be obtained from Section 705.11.1

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

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

ICCFILENAME: MAIEL-FS4-706.6.doc

FS28–09/10
706.8

Proponent: Randy B. Maurer, Associated Building Inspections, Inc., representing Pennsylvania Association of Building Code Officials, Inc.

Revise as follows:

706.8 Openings. Each opening through a *fire wall* shall be protected in accordance with Section 715.4 and shall not exceed 156 square feet (15 m^2). The aggregate width of openings at any floor level <u>of a wall over 20 feet long</u> shall not exceed 25 percent of the length of the wall.

(Exception 1 and 2 remain unchanged)

Reason: Occasionally, a small fire wall is needed to divide a wide circulation space connecting two buildings. For example, two large unsprinklered warehouse structures may be connected by a 12' corridor for forklift traffic. The 25% rule would limited the opening in that wall to 3' wide. The proposed change would allow that opening to be at least 8' to accommodate the forklifts. The 20' limit is based on a 16' wide door for moving materials, assuming 2' of wall on either side.
Cost Impact: The code change proposal will not increase the cost of construction.

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

ICCFILENAME: Maurer-FS2-706.8

FS29–09/10
707.3.8, 901.7; 901.4.3

Proponent: Marshall Klein PE, Marshall A. Klein & Associates Inc., representing Marshall A. Klein & Associates, Inc.

THIS IS A 2 PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THE FIRE SAFETY COMMITTEE.

PART I – IBC FIRE SAFETY

Revise as follows:

707.3.8 Separation of mixed occupancies. Where the provisions of Section 508.4 are applicable, the fire barrier <u>or horizontal assembly</u> separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Section 508.4 based on the occupancies being separated <u>to comply with the allowable area requirement of Section 508.4</u>. <u>For purposes of determining the size of fire areas for requiring a fire protection system in accordance with Chapter 9, such fire areas shall be separated by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 712, or both, having a fire-resistance rating of not less than that determined in accordance with Table 707.3.9.</u>

901.7 Fire areas. <u>For purposes of determining fire protection system requirements in accordance with this chapter,</u> where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 712, or both, having a fire-resistance rating of not less than that determined in accordance with Section <u>707.3.8 or Section</u> 707.3.9<u>, as applicable</u>.

PART II – IFC

Add new text as follows:

901.4.3 Fire areas. For purposes of determining fire protection system requirements in accordance with this chapter, buildings, or portions thereof, divided into fire areas shall be separated by fire barriers constructed in accordance with the International Building Code and having a fire-resistance rating of not less than that determined in accordance with the International Building Code Section 707.3.8 or Section 707.3.9, as applicable.

Reason: This code proposal is strictly editorial and for correlation of requirements between the IBC and IFC with no intent to change the requirements under the Codes.

In the July-August 2008 Building Safety Journal there was an article entitled "Fire Barrier Ratings in Separated Mixed Occupancies", by Kevin Scott, ICC Senior Regional Manager of Fire Services Activities. That article explained the application of the code requirements that were unclear to many users of the Code on this subject. FS34-07/08 was a good start on clarifying IBC Section 707.3.9 last code cycle on this issue. This code proposal is attempting to further help clarify this issue in the other relevant sections of the I Codes by adding the appropriate text into the IBC and IFC Codes to properly state what Mr. Scott noted in his article was the intent of the Code.

Part I of this code proposal adds to the IFC Code new Section 901.4.3, "Fire areas", to correlate with the identical existing IBC Section 901.7, "Fire areas".

Part II of this code proposal adds to IBC Section 707.3.8, "Separation of mixed occupancies", the clarification that the provisions of Section 508.4, "Separated occupancies", also apply to horizontal assemblies as well as to the vertical fire barriers. This section will now correlate with Section 707.3.9, "Fire areas" that also applies to both fire barriers and horizontal assemblies.

In summary, this code proposal provides the code text language clarifications that follow the explanation of the code's intent based on the article in the July-August 2008 Building Safety Journal, by Kevin Scot, ICC Senior Regional Manager of Fire Services Activities.

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

PART I – IBC FIRE SAFETY

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

PART II – IFC

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

ICCFILENAME: KLEIN-FS1-707.3.8

FS30–09/10
707.3.9

Proponent: David S. Collins, FAIA, The Preview Group, Inc., representing The American Institute of Architects

Revise as follows:

707.3.9 Fire areas. Where required by Section 903, 905 or 907, ~~T~~the fire barriers or horizontal assemblies, or both, separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 707.3.9. The fire barriers or horizontal assemblies, or both, separating fire areas of mixed occupancies shall have a fire-resistance rating of not less than the highest value indicated in Table 707.3.9 for the occupancies under consideration.

Reason: The creation of single-occupancy fire areas is only required when determining if the fire area exceeds the limits in Sections 903, 905 or 907.

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

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

ICCFILENAME: Collins-FS1-707.3.9

FS31–09/10
TABLE 707.3.9

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

Revise as follows:

TABLE 707.3.9
FIRE-RESISTANCE RATING REQUIREMENTS FOR FIRE BARRIER ASSEMBLIES OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS

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

a. For Group M occupancies containing display shelves or storage racks where the top of the merchandise is greater than 12 feet (3658 mm) in height above the floor, the minimum fire-resistance rating shall be 3 hours.

Reason: The purpose of this proposed code change is to increase the required fire-resistance rating from 2-hours to 3-hours for fire barriers and horizontal assemblies used to separate fire areas of Group M occupancies where the Group M occupancy contains display shelves and/or storage racks where the top of the merchandise is greater than 12 ft in height. This is intended to recognize the fact that the fire load will be significantly greater in those Group M occupancies where the heights of the merchandise on display or on storage racks in the retail sales area exceed 12 ft. For the most part where Group M occupancies have display racks less than 8 ft in height, the fire load will generally not exceed 20 pounds per sq ft which is roughly equivalent to a 2-hour fire duration. However, for those stores where the display shelving and storage racks allow for merchandise to be placed greater than 12 ft above the floor such as in the typical "big box" stores where the fire load is significantly greater, the fire load can greatly exceed 20 pounds per sq ft and can be as high as 30 to 40 pounds per sq ft. A 30 pound per sq ft fire load is roughly equivalent to a 3-hour fire duration.

We believe this is especially important since fire areas are used to avoid the requirements triggering automatic sprinkler system protection in accordance with Section 903.2.7 for Group M occupancies. If a Group M occupancy building is separated into fire areas of 12,000 sq ft or less, then the building is not required to be sprinklered unless the combined fire areas exceed 24,000 sq ft. In reality, this means that a 1-story building could be divided into two 12,000 sq ft fire areas without having to provide for automatic sprinkler protection. Similarly, a 3-story Group M occupancy limited to 8,000 sq ft per story with the floors (horizontal assemblies) having the required fire-resistance rating to create the fire area separations would also not be required to be sprinklered. In those nonsprinklered cases, it is very important to limit the fire load for the Group M occupancies based on the height of the merchandise displayed and stored in the building. So for those cases which generally encompass most retail sales situations, the 2-hour fire-resistance rating would be suitable. But for those cases such as the "big box" stores where the display shelves and storage racks are greater than 12 ft in height, the fire-resistance rating of the fire barriers and horizontal assemblies should be increased to a minimum of 3-hours.

The proposed 12 ft height limit is also consistent with Chapter 23 of the International Fire Code for high-piled combustible storage which is defined as "storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of the storage is greater than 12 ft (3658 mm) in height…" Chapter 23 recognizes that high-piled combustible storage creates a much greater fire hazard than storage of lesser heights. Thus, there are more restrictive fire safety requirements incorporated into Chapter 23 as enumerated in Table 2306.2 General Fire Protection and Life Safety Requirements. This recognizes the fact that the fire load is significantly greater in these types of storage occupancies.

Increasing the minimum fire-resistance rating from 2-hours to 3-hours for these Group M occupancies would also be consistent with the minimum 3-hour fire-resistance rating specified for Group F-1, H-3, and S-1 occupancies in the table based on the relative fire load and fire hazard. And it is also consistent with Table 706.4 Fire Wall Fire-Resistance Ratings.

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

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

ICCFILENAME: Thornberry-FS3-707.3.9

FS32–09/10
707.7

Proponent: Sarah A. Rice, CBO, representing self

Revise as follows:

707.7 Penetrations. Penetrations of *fire barriers* shall comply with Section 713.

707.7.1 Prohibited penetrations. Penetrations of fire barriers used to construct ~~into~~ an *exit* enclosure or enclose an *exit* passageway shall be allowed only when permitted by Section 1022.4 or 1023.6, respectively.

Reason: The proposed revision makes it clear that it is "fire barriers" that are being penetrated. It make the language consistent with that for the sections on openings, joints and ducts and air-transfer openings.

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-FS1c-707-7

FS33–09/10
707.8

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

Revise as follows:

707.8 Joints. Joints made in or between fire barriers, and joints made at the intersection of fire barriers with underside of the floor or roof sheathing, slab, or deck above, and the exterior vertical wall intersection shall comply with Section 714.

Reason: The proposed language clarifies that the same requirement to protect the joint of a fire barrier and the underside of the floor also applies to the joint of a fire barrier and an exterior wall.

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

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

ICCFILENAME: KOFFELL-FS1-707.8.doc

FS34–09/10
708

Proponent: Sarah A. Rice, CBO, representing self

Revise as follows:

(Relocate Section 708 in its entirety to become NEW Section 714)

Section 714 ~~708~~ Shaft Enclosures

(Renumber applicable section numbers)

Reason: This proposal seeks to relocate Section 708 to become New Section 714, appearing behind the Section 713 Penetrations. This is done because the only way to get to the shaft section is through Section 713 and because a shaft is only one of several ways that a penetration in a horizontal assembly can be protected.

References within sections have not been correlated. ICC Staff has indicated that if accepted this would be done editorially.

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-FS1d-708

FS35–09/10
708.5

Proponent: Sharon Halpert, representing self

Revise as follows:

708.5 Continuity. Shaft enclosures shall be constructed as *fire barriers* in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 712, or both, and shall have continuity in accordance with Section 707.5 for *fire barriers* or Section 712.4 for *horizontal assemblies* as applicable. Joints created at every intersection between the bottom of a shaft wall assembly and the top of the floor or slab shall also comply with Section 714

Reason: Where used, shafts are critical building elements in preventing the passage of heat, flame and toxic gases to stories beyond the floor of fire origin. While the requirements for continuity of vertical and horizontal shafts through floors and walls are quite detailed, there is a lack of specific information for the construction detail required when the shaft wall is not a continuous membrane, but rather is interrupted at one or more floors by the floor slab.

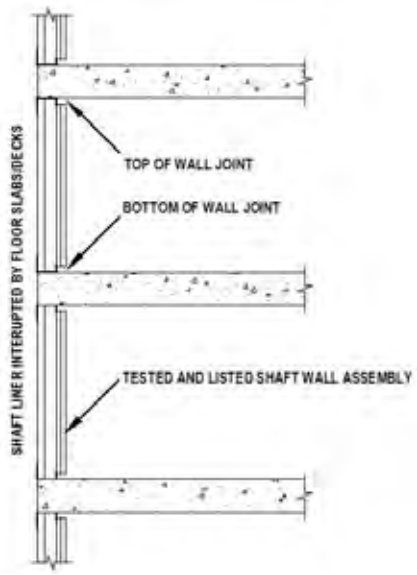
Substantiation: A shaft is intended to be a continuous assembly (fire barrier) from its lowest point to its highest point, with all openings, joints and penetrations suitably protected or sealed. This revision serves simply to clarify the intent of how this protection will be maintained.

When a shaft is hung entirely from the floors it traverses and is constructed of wall materials (e.g. gypsum boards, concrete masonry units) that are joined one to another from top to bottom, there would normally not be any intermediate floor slabs that would bisect the shaft wall, and therefore no fire resistive joint systems within the wall.

On the other hand, when a shaft enclosure is constructed of independent wall segments that rest on top of each floor slab/deck that the shaft traverses, there will be a joint between the wall segments and the floor slab/deck above, as well as between the wall and the floor slab/deck below it. Clearly both types of joints will occur at each level this shaft wall assembly is intended to protect. Shaft construction is unique in that the joint at the top of the wall and at the bottom of wall are equally important in maintaining the anticipated protection.

Since the code already maintains provisions for the continuity of shaft wall construction, this proposed clarification will simply serve to enhance this intent. Smoke and fire inside a shaft, in a multi-story building, will not delineate between the head of wall joint on the underside of a deck and the bottom of wall joint on the top side of this same deck. Once the pressure builds and the temperatures rise, fire and smoke will find its way through any unprotected areas. An illustration of this condition is enclosed.

There are dozens of bottom-of-wall fire resistance rated joint systems that have been tested by nationally recognized testing organizations and have been listed in their directories. Information concerning these details is described in the individual systems. Bottom-of-wall joint systems have been investigated using the general methods and conditions of acceptance specified for the four defined types of joint systems in ANSI/UL 2079 and ASTM E1966.



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

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

ICCFILENAME: HALPERT-FS1-708.5

FS36–09/10
708.8

Proponent: David S. Collins, FAIA, The Preview Group, Inc. representing The American Institute of Architects

Revise as follows:

708.8 Penetrations. Penetrations in a shaft enclosure shall be protected in accordance with Section 713 as required for fire barriers. Structural elements, such as beams or joists, where they and their supporting construction are protected in accordance with Section 713 shall be permitted to penetrate a shaft enclosure.

Reason: It is virtually impossible to design a shaft enclosure over a few stories tall without some support from adjoining structural elements. This change will allow a beam or other structural member to penetrate a shaft as long as it is also protected as required.

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

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

ICCFILENAME: Collins-FS2-708.8

FS37–09/10
708.13, Chapter 35

Proponent: Christine Reed and Stuart Tom, PE, CBO, representing the California Fire Chiefs Association

1. Revise as follows:

708.13 Refuse and Laundry Chutes. In other than Group I-2, refuse and laundry chutes, access and termination rooms and incinerator rooms shall meet the requirements of sections 708.13.1 through 708.13.6.

Exceptions:

1. Chutes serving and contained within a single dwelling unit
2. Refuse and laundry chutes in Group I-2 shall comply with the provisions of NFPA 82, Chapter 5.

2. Add new standard to Chapter 35 as follows:

NFPA	
82-09	Standard on Incinerators and Waste and Linen Handling Systems and Equipment, 2009 Edition

Reason: Please note that 2 copies of the new referenced standard will be provided via United States Postal Service for this proposal.

Hospitals that are accredited by the Joint Commission must follow not only the rules of the International Code when being constructed, but must also follow the Life Safety Code (NFPA 101). Within that code, linen and rubbish chutes must conform to a set of rules that are in not only NFPA 101, but also NFPA 82. The rules in both documents are largely consistent with the current IBC. One area of concern in which there is an inconsistency is that NFPA 82 requires that the top of the chute must be vented to the outside (NFPA 82, 5.2.2.4). Because this provision is not in the IBC, it creates a problem when the hospital tries to get its accreditation. Rectifying this problem after construction is completed can create a problem since it involves altering the roof, and demolishing that which has already been constructed. It would be less expensive to build the chute with the vent from the outset.

Having refuse and linen chutes follow the provisions of NFPA 82 ensures that the International code stays current with Joint Commission rules without having to go through a code change proposal each time the NFPA standard changes.

This proposal does not include adopting any portion of NFPA 101.

Referenced Standards: NFPA 82, 2004 edition

Cost Impact: The code change proposal will increase the cost of construction.
Analysis: A review of the standard(s) proposed for inclusion in the code, NFPA 82-09 for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: REED-TOM-FS1-707.13

FS38–09/10
708.13.4

Proponent: Larry Lincoln, representing Utah Chapter of ICC

Revise as follows:

708.13.4 Termination room. Refuse and laundry chutes shall discharge into an enclosed room separated from the remainder of the building by ~~not less than 1-hour~~ *fire barriers* constructed in accordance with Section 707.3 or *horizontal assemblies* constructed in accordance with Section 712.3, or both. Openings into the termination room shall be protected by opening protectives having a *fire protection rating* ~~of not less than 3/4 hour~~ equal to the protection required for the shaft enclosure. Doors shall be self- or automatic- closing upon the detection of smoke in accordance with Section 715.4.8.3. Refuse chutes shall not terminate in an incinerator room. Refuse and laundry rooms that are not provided with chutes need only comply with Table 508.2.5.

Reason: The current wording in the code creates some confusion as to when a refuse and laundry chute termination room should have a fire-resistance rating greater than 1 hour. The hourly rating of the termination room and opening protectives need to reflect language similar to that found in Section 708.11 (Enclosure at the bottom) of which this proposed change now does reflect.

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-FS1-708.13.4

FS39–09/10
708.3.1 (New), 708.13.1, 708.13.3, 715.4.1, 715.4.2, 715.4.8

Proponent: Edward L. Repic, Architectural Refuse Solutions, LLC, representing self

1. Add new text as follows:

708.3 Materials. The shaft enclosure shall be of materials permitted by the building type of construction.

708.3.1 Shaft enclosure at rubbish and laundry chutes. The shaft enclosure containing a rubbish or laundry chute shall include the following provisions:

708.3.1.1 Single sided construction. The chute shaft enclosure shall be of a listed construction that can be fully assembled in accordance with its approved design, including all required drywall taping when required by the design, from one side after the chute has been installed, regardless of the presence of bearing walls supporting floor framing.

708.3.1.2 Identical floor and wall ratings. A chute shaft enclosure shall provide the required fire protection rating over its entire length. Fire ratings shall not be lower at floor, ceiling or roof framing intersections.

708.3.1.3 Extend shaft enclosure to roof. The shaft enclosure shall extend to the underside of the roof. Structural framing members supporting the roof shall be outside of the chute shaft enclosure and shall not be permitted inside the shaft enclosure.

2. Revise as follows:

708.13.1 Rubbish and laundry chute enclosures. A shaft enclosure containing a rubbish or laundry chute shall not be used for any other purpose and shall be enclosed in accordance with Section 708.3.1 and 708.4. ~~Openings into the shaft~~, Fire-rated chute intake door assemblies as well as openings ~~including those~~ from access rooms and termination rooms, shall be protected in accordance with this section and Section 715. Openings into chutes shall not be located in *corridors*. ~~Doors~~ Fire-rated chute intake door assemblies shall be self- or automatic-closing upon the actuation of a smoke detector in accordance with Section 715.4.8.3, except that heat-activated closing devices shall be permitted between the shaft and the termination room. Fire-rated chute intake door assemblies shall additionally comply with Sections 715.4.8 and 715.4.8.1.1.

708.13.3 Rubbish and laundry chute access rooms. ~~Access openings~~ Openings into access rooms for rubbish and laundry chutes shall be located in rooms or compartments enclosed by not less than 1-hour *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 712, or both. Openings into the access rooms shall be protected by opening protectives having a *fire protection rating* of not less than 3/4 hour. Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 715.4.8.3.

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

> **Exception:** Side-hinged rubbish and laundry chute intake doors shall be tested to UL-10B and shall otherwise comply with the provisions of Section 715.4.8 and 715.4.8.1.1.

715.4.2 Other types of assemblies. *Fire door* assemblies with other types of doors, including swinging elevator doors and fire shutter assemblies, bottom and side-hinged chute intake doors, and top hinged chute discharge doors, shall be tested in accordance with NFPA252 or UL10B. The pressure in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible. Once established, the pressure shall be maintained during the entire test period.

715.4.8 Door closing. *Fire doors* shall be self- or automatic-closing in accordance with this section. Self-closing chute intake doors shall not fail in a “door open” position in the event of a closer failure.

3. Add new text as follows:

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

715**.4.8.1.1 Chute intake door latching**. Chute intake doors shall be positive latching, remaining latched and closed in the event of latch spring failure during a fire emergency.

4. Revise as follows:

715.4.8.3 Smoke-activated doors. Automatic-closing doors installed in the following locations shall be automatic-closing by the actuation of smoke detectors installed in accordance with Section 907.3 or by loss of power to the smoke detector or hold-open device. Doors that are automatic-closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated:

1. Doors installed across a *corridor*.
2. Doors that protect openings in *exits* or *corridors* required to be of fire-resistance-rated construction.
3. Doors that protect openings in walls that are capable of resisting the passage of smoke in accordance with Section 508.2.5.2.
4. Doors installed in *smoke barriers* in accordance with Section 710.5.
5. Doors installed in *fire partitions* in accordance with Section 709.6.
6. Doors installed in a *fire wall* in accordance with Section 706.8.
7. Doors installed in shaft enclosures in accordance with Section 708.7.
8. Doors installed in rubbish and laundry chutes and access and termination rooms in accordance with Section 708.13. Automatic-closing chute intake doors installed in rubbish and laundry chutes shall also meet the requirements of Sections 715.4.8 and 715.4.8.1.1.
9. Doors installed in the walls for compartmentation of underground buildings in accordance with Section 405.4.2.
10. Doors installed in the elevator lobby walls of underground buildings in accordance with Section 405.4.3.
11. Doors installed in smoke partitions in accordance with Section 711.5.3.

Reason: This submittal is part of four such proposals submitted as independent documents with the intent of adequately addressing Rubbish Chutes (which can include "recycling" chutes that simply redirect parts of the rubbish waste stream to locations other than a landfill) and Laundry (or Laundry) Chutes. These proposals individually address Life Safety, Sprinkler Placement, Accessibility in new and existing facilities, and actual Chute Construction and a related component to Rubbish Chutes: Compactors (codes generally address the shaft enclosure but ignore the actual chute being enclosed or the compactor it is feeding).

Reason with regard to 708.3.1: The proposed additions are designed to overcome common mistakes that most commonly, but not exclusively, occur in wood frame structures. The single side construction concept is crucial as most fire wall designs require full fire taping on both sides of the wall. It is impossible to all required fire taping on the inside surface of a chute enclosure because the chute is in place, as is the chute intake door. Wood framing also commonly creates problems with fire ratings at wall and floor intersection as well as roof framing interferences.
Reason with regard to 708.13.1: The first addition of text simply coordinates information between sections. The next two additions, calling out "fire-rated chute intake door assemblies", permit differentiation between man doors and intake doors specifically accessing the chute by penetration of the enclosure. The final text addition again provides coordination between sections and additionally introduces differentiation between side-hinged and bottom-hinged doors.
Reason with regard to 708.13.3: This "deletion and substitution" continues the theme of providing differentiation between man doors and intake doors specifically accessing the chute by penetration of the shaft enclosure.
Reason with regard to 715.4.1 Exception (new): This additional text is an occurrence of the need for differentiation between man doors and fire doors that perform as chute intake doors. Chute intake doors do not exist as UL-10C doors. They are always UL-10B doors regardless of whether they are side-hinged (almost exclusively used on laundry chutes) or bottom hinged (most often used on rubbish chutes and occasionally on linen chutes).
Reason with regard to 715.4.2: The additional text coordinates information with other sections for clarity.
Reason with regard to 715.4.8, 715.4.8.1, and 715.4.8.3: Rubbish and Laundry Chute intake doors, as listed fire doors are required to be self-closing and positive latching to maintain constant protection of the fire wall penetrations that are the chute access (intake) points on specific floors of the buildings they serve: Apartments & Condominiums, Medical & Nursing Facilities, and Hotels...places where people sleep. Because of their mundane nature, they are typically used daily by every resident or maintenance staff member. Resultantly, they are used much more frequently than most fire doors because they are logically not equipped with hold-open devices. These intake doors have two short-comings as fire protection devices.

First, in a pre-fire condition, the industry-wide recognized symptom that an intake is in need of a closer replacement is an open chute intake door. This creates a major fire hazard in that the now-unprotected opening exposes other floors of the building serviced by the chute, which extends to and penetrates the roof, to fire damage to life and property. Unfortunately, most maintenance personnel and, worse, most fire inspectors, do not recognize the inherent danger and simply don't facilitate/require repair of the failed closer. This proposal is based, in part, upon the idea that a self-closing fire door used for a chute intake should REMAIN closed, even in the event of a closer failure. Simple technology exists that can insure closer operation in the event of a failure of normal closer function.

Secondly, in an actual fire emergency which involves a chute door from either, or even *both* sides, two things happen: A) the closer experiences hydraulic seal failure, permitting the hydraulic fluid to burn away. Even more destructive is the fact that the aluminum closer cylinder housing melts away. Both of these occur significantly before the required 90-minute door life. And B) the vertically-installed latch bolt on bottom-hinged, rubbish chute doors (as opposed to the horizontally positioned latch on side-hinged laundry chute doors) can be heated to the point where the spring holding the latch bolt in an extended position fails, thereby losing tension (spring manufacturers peg the maximum temperature limit for *any* spring at about 600°F. to 700°F). Without spring tension, the latch bolt can compress the spring, allowing the intake door to fall open DURING the fire emergency. This failure then promotes the possible spread of the fire to uninvolved areas of the building in every smoke compartment through which the chute passes. This proposal is based, in part, upon the idea that a positive latching fire door used for a chute intake should REMAIN latched, even in the event of a tension spring failure. Simple technology exists that can insure latch bolt operation in the event of such a tension spring failure.

Cost Impact: For closer and latch modifications: Less than $75, installed

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

ICCFILENAME: REPIC-FS1-708.3.1 New

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, <u>other than the elevator shaft doors,</u> shall also comply with Section 715.4.3 as required for corridor walls and penetrations of the elevator lobby enclosure y 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. <u>Elevator lobby fire door assemblies in accordance with Section 715 shall be tested in accordance with UL 1784 without an artificial bottom seal.</u> 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 ¾ 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 <u>with the UL 1784 test conducted without an artificial bottom seal.</u> ~~and p~~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.

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

ICCFILENAME: EUGENE-FS2-708.14.1Exc3

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.

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

ICCFILENAME: Cahanin-FS1-708.14.1

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 ~~H~~ 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. <u>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.</u>

(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. <u>When elevator hoistway pressurization is provided, the pressurization of exit stair enclosures under Section 1022.9 is not permitted.</u>

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:

<u>**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.</u>

(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 examined[1]. 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 affect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires[2]. 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 affect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires. The 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.

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 ~~714.8.2~~ 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.

Exception~~s~~:

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~~ 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

FS56–09/10

702.1, 708, 708.1, 708.2, 712.4, 711.4.1 (NEW), 715.5,712.1.1 (NEW), 712.1.4, through 712.1.18, 713 (New), 713.1 (NEW), 713.3, 713.4, 713.4.1, 713.4.1.2,713.4.1.3,713.4.1.4, 713.4.2, 713.4.2.1, 713.4.2.2, 713.5, 714.6

Proponent: Paul K. Heilstedt, PE,FAIA, Chair, representing ICC Code Technology Committee (CTC)

Revise as follows:

SECTION 702
DEFINITIONS

702.1 Definitions. The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein.

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

L RATING. The air leakage rating of a through penetration firestop system or a fire-resistant joint system when tested in accordance with UL 1479 or UL 2079, respectively.

MEMBRANE PENETRATION. ~~An opening made through one side (wall, floor or ceiling membrane) of an assembly.~~ . A breach in one side of a floor-ceiling, roof-ceiling or wall assembly to accommodate an item installed into or passing through the breach.

MEMBRANE-PENETRATION FIRESTOP. A material, device or construction installed to resist for a prescribed time period the passage of flame and heat through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

MEMBRANE-PENETRATION FIRESTOP SYSTEM. An assemblage consisting of a fire-resistance-rated floor-ceiling, roof-ceiling or wall assembly, one or more penetrating items installed into or passing through the breach in one side of

the assembly and the materials or devices, or both, installed to resist the spread of fire into the assembly for a prescribed period of time.

PENETRATION FIRESTOP. A through-penetration firestop or a membrane-penetration firestop.
THROUGH PENETRATION. ~~An opening that passes through an entire assembly.~~ A breach in both sides of a floor, floor-ceiling or wall assembly to accommodate an item passing through the breaches.

THROUGH-PENETRATION FIRESTOP SYSTEM. ~~An assemblage of specific materials or products that are designed, tested and fire-resistance rated to resist for a prescribed period of time the spread of fire through penetrations. The F and T rating criteria for penetration fire stop systems shall be in accordance with ASTM E814 or UL 1479. See definition of "F" rating and "T" rating".~~ An assemblage consisting of a fire-resistance-rated floor, floor-ceiling, or wall assembly, one or more penetrating items passing through the breaches in both sides of the assembly and the materials or devices, or both, installed to resist the spread of fire through the assembly for a prescribed period of time.

(Relocate Section 708 to Section 712 and 713. Renumber subsequent sections)

SECTION ~~709~~ 708
FIRE PARTITIONS

SECTION ~~710~~ 709
SMOKE BARRIERS

SECTION ~~711~~ 710
SMOKE PARTITIONS

SECTION ~~712~~ 711
HORIZONTAL ASSEMBLIES

~~712.4~~ 711.4 Continuity. Assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections ~~708.2~~ 712.1, ~~713.4~~ 714.4, ~~714~~ 715 and 1022.1. Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof construction is maintained. Unprotected skylights shall not be permitted in roof assemblies required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

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

1. Horizontal assemblies at the separations of incidental uses as specified by Table 508.2.5, provided the required *fire-resistance rating* does not exceed 1 hour.
2. Horizontal assemblies at the separations of *dwelling units* and *sleeping units* as required by Section 420.3.
3. Horizontal assemblies at *smoke barriers* constructed in accordance with Section ~~710~~ 709.

711.4.1 Nonfire-resistance-rated assemblies. ~~Linear openings~~ Joints in or between floors assemblies without a required fire-resistance rating shall comply with one of the following:

1. The linear opening shall be concealed within the cavity of a wall.
2. The linear opening shall be located above a ceiling.
3. The linear opening shall be sealed, treated or covered with an approved material or system to resist the free passage of flame and the products of combustion.

Exception: Joints meeting one of the joint exceptions listed in 715.1

~~712.5~~ 711.5 Penetrations. Penetrations of horizontal assemblies, whether concealed or unconcealed, shall comply with Section ~~713~~ 714.

SECTION ~~708~~ 712
~~SHAFT ENCLOSURES~~ VERTICAL OPENINGS

~~708.1~~ 712.1 General. The provisions of this section shall apply to the vertical opening applications listed in Sections 712.1.1 through 712.1.18. ~~shafts required to protect openings and penetrations through floor/ceiling and roof/ceiling~~

~~assemblies. Shaft enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 712, or both.~~

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

~~**Exceptions:**~~

712.1.1 Smoke compartments. Vertical openings contained entirely within a shaft enclosure complying with Section 709 shall be permitted.

~~**1.**~~ **712.1.2 Individual dwelling unit.** ~~A shaft enclosure is not required for~~ Unconcealed vertical openings totally within an individual residential dwelling unit and connecting four stories or less shall be permitted.

~~**2.**~~ **712.1.3 Escalator and Stairway Openings.** ~~A shaft enclosure is not required in~~ Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, ~~for~~ an escalator opening or stairway that is not a portion of the means of egress shall be protected according to Item ~~2.1 or 2.2~~ 712.1.3.1 or 712.1.3.2:

~~**2.1**~~ **712.1.3.1 Opening size.** Where the area of the ~~floor~~ vertical opening between stories does not exceed twice the horizontal projected area of the escalator or stairway and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

~~**2.2**~~ **712.1.3.2 Automatic shutters**. Where the vertical opening is protected by approved power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.11 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release there from.

~~**3.**~~ **712.1.4 Penetrations.** ~~A shaft enclosure is not required for~~ Penetrations by pipe, tube, conduit, wire, cable and vents shall be protected in accordance with Section ~~713.4~~ 712.4.

~~**4.**~~ **712.1.5 Ducts.** ~~A shaft enclosure is not required for~~ Penetrations by ducts shall be protected in accordance with Section 716.6. Grease ducts shall be protected in accordance with the *International Mechanical Code*.

~~**5.**~~ **712.1.6 Atriums.** In other than Group H occupancies, ~~a shaft enclosure is not required for floor openings complying with the provisions for~~ atriums ~~in~~ complying with Section 404 shall be permitted.

~~**6.**~~ **712.1.7 Masonry chimney.** ~~A shaft enclosure is not required for~~ Approved masonry chimneys shall be permitted where the annular space is fireblocked at each floor level in accordance with Section 717.2.5.

~~**7.**~~ **712.1.8 Two story openings**. In other than Groups I-2 and I-3~~, a shaft enclosure is not required for~~ a floor opening that is not used as one of the applications listed in this section shall be permitted if it complies with all the items below ~~or an air transfer opening that complies with the following:~~

~~7.1~~ 1. Does not connect more than two stories.
~~7.2~~ 2. Does not contain a stairway or ramp required by Chapter 10. ~~Is not part of the required means of egress system~~.
3. Does not penetrate a horizontal assembly that separates fire areas or smoke barriers that separate smoke compartments.
~~7.3~~ 4. Is not concealed within the construction of a wall or a floor/ceiling assembly.
~~7.4~~ 5. Is not open to a corridor in Group I and R occupancies.
~~7.5~~ 6. Is not open to a corridor on nonsprinklered floors ~~in any occupancy~~.
~~7.6~~ 7. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
~~7.7. Is limited to the same smoke compartment~~.

~~8.~~ **712.1.9 Parking garages**. ~~A shaft enclosure is not required for~~ Automobile ramps in open and enclosed parking garages shall be permitted where constructed in accordance with Sections 406.3 and 406.4, respectively.

~~9.~~ **712.1.10 Mezzanine.** ~~A shaft enclosure is not required for~~ Vertical ~~floor~~ openings between a mezzanine complying with Section 505 and the floor below shall be permitted. ~~and the floor below.~~

~~10.~~ **712.1.11 Joints.** ~~A shaft enclosure is not required for~~ Joints shall be permitted where complying ~~protected by a fire-resistant joint system in accordance~~ with Section ~~714~~ 715.

~~11.~~ **712.1.12 Unenclosed stairs and ramps.** A ~~shaft enclosure shall not be required for~~ vertical floor openings created by unenclosed stairs or ramps in accordance with Exception 3 or 4 in Section 1016.1 shall be permitted.

~~12.~~ **712.1.13 Floor Fire Doors.** ~~Floor~~ Vertical openings shall be permitted where protected by floor fire doors in accordance with Section ~~712.8~~ 711.8.

~~13.~~ **712. 1.14. Group I-3.** In Group I-3 occupancies, ~~a shaft enclosure is not required for floor~~ vertical openings shall be permitted in accordance with Section 408.5.

~~14.~~ **712.1.15 Elevators in parking garages.** ~~A shaft enclosure is not required for e~~ vertical openings for elevator hoistways in open or enclosed parking garages that serve only the parking garage, and complying with 406.3 and 406.4 respectively, shall be permitted..

~~15.~~ **712.1.16 Duct systems in parking garages.** Vertical openings for mechanical exhaust or supply duct systems in open or enclosed parking garages ~~a shaft enclosure is not required to enclose mechanical exhaust or supply duct systems~~ complying with 406.3 and 406.4 respectively, shall be permitted to be unenclosed where ~~when~~ such duct system is contained within and serves only the parking garage.

712.1.17 Nonfire-resistance-rated joints. Joints in or between floors without a required fire-resistance rating shall be permitted in accordance with section 711.4.1.

~~16.~~ **712.1.18 Openings otherwise permitted.** Vertical openings shall be ~~Where~~ permitted where allowed by other sections of this code.

SECTION 713
SHAFT ENCLOSURES

713.1 General. The provisions of this section shall apply to shafts required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies. Shaft enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both.

~~708.3~~ **713.2 Materials.** *(No change to text)*

~~708.4~~ **713.3 Fire-resistance rating.** *(No change to text)*

~~708.5~~ **713.4 Continuity.** *(No change to text)*

~~708.6~~ **713.5 Exterior Walls.** *(No change to text)*

~~708.7~~ **713.6 Openings.** *(No change to text)*

~~708.7.1~~ **713.6.1 Prohibited openings.** *(No change to text)*

~~708.8~~ **713.7 Penetrations.** *(No change to text)*

~~708.8.1~~ **713.7.1 Prohibited penetrations.** *(No change to text)*

~~708.9~~ **713.8 Joints.** *(No change to text)*

~~708.10~~ **713.9 Duct and air transfer openings.** *(No change to text)*

~~708.11~~ **713.10 Enclosure at the bottom.** *(No change to text)*

~~708.12~~ 713.11 **Enclosure at top.** *(No change to text)*

~~708.13~~ 713.12 **Refuse and laundry chutes.** *(No change to text)*

~~708.13.1~~ 713.12.1**Refuse and laundry chute enclosures.** *(No change to text)*

~~708.13.2~~ 713.12.2 **Materials.** *(No change to text)*

~~708.13.3~~ 713.12.3 **Refuse and laundry chute access rooms.** *(No change to text)*

~~708.13.4~~ 713.12.4 **Termination room.** *(No change to text)*

~~708.13.5~~ 713.12.5 **Incinerator room.** *(No change to text)*

~~708.13.6~~ 713.12.6 **Automatic sprinkler system.** *(No change to text)*

~~708.14~~ 713.13 **Elevator, dumbwaiter and other hoistways.** *(No change to text)*

~~708.14.1~~ 713.13.1 **Elevator lobby.** *(No change to text)*

~~708.14.1.1~~ 713.13.1.1 **Areas of refuge.** *(No change to text)*

~~708.14.2~~ 713.13.2 **Enclosed elevator lobby.** *(No change to text)*

~~708.14.2.1~~ 713.13.2.1 **Pressurization requirements.** *(No change to text)*

~~708.14.2.2~~ 713.13.2.2 **Rational analysis.** *(No change to text)*

~~708.14.2.3~~ 713.13.2.3 **Ducts for system.** *(No change to text)*

~~708.14.2.4~~ 713.13.2.4 **Fan system.** *(No change to text)*

~~708.14.2.4.1~~ 713.13.2.4.1 **Fire resistance.** *(No change to text)*

~~708.14.2.4.2~~ 713.13.2.4.2 **Smoke detection.** *(No change to text)*

~~708.14.2.4.3~~ 713.13.2.4.3 **Separate systems.** *(No change to text)*

.

~~708.14.2.4.4~~ 713.13.2.4.4 **Fan capacity.** *(No change to text)*

~~708.14.2.5~~ 713.13.2.5 **Standby power.** *(No change to text)*

~~708.14.2.6~~ 713.13.2.6 **Activation of pressurization system.** *(No change to text)*

~~708.14.2.7~~ 713.13.2.7 **Special inspection.** *(No change to text)*

~~708.14.2.8~~ 713.13.2.8 **Marking and identification.** *(No change to text)*

~~708.14.2.9~~ 713.13.2.9 **Control diagrams.** *(No change to text)*

~~708.14.2.10~~ 713.13.2.10 **Control panel.** *(No change to text)*

~~708.14.2.11~~ 713.13.2.11 **System response time.** *(No change to text)*

SECTION ~~713~~ 714
PENETRATIONS

~~713.3~~ 714.3 **Fire-resistance-rated walls.** Penetrations into or through fire walls, fire-barrier walls, smoke-barrier walls and fire partitions shall comply with Sections ~~713.3.1~~ 714.3.1 through ~~713.3.4~~ 714.3.4. Penetrations in smoke barrier walls shall also comply with Section ~~713.5~~ 714.5.

~~713.3.1~~ 714.3.1 **Through penetrations.** *(No change to text)*

~~713.3.1.1~~ 714.3.1.1 **Fire resistance rated assemblies.** *(No change to text)*

~~713.3.1.2~~ 714.3.1.2 **Through penetration firestop system.** *(No change to text)*

~~713.3.2~~ 714.3.2 **Membrane penetrations.** *(No change to text)*

~~713.3.3~~ 714.3.3 **Dissimilar materials.** *(No change to text)*

~~713.4~~ 714.4 **Horizontal assemblies.** Penetrations of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly not required to be enclosed in a shaft by Section 708.2 shall be protected in accordance with Sections ~~713.4.1~~ 714.4.1 through ~~713.4.2.2~~ 714.4.2.2.

~~713.4.1~~ 714.4.1 **Fire-resistance rated assemblies.** Penetrations of the fire-resistance rated floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall comply with Sections ~~714.4.1.1~~ 713.4.1.1 through ~~713.4.1.4~~ 714.4.1.4. Penetrations in horizontal smoke barriers shall also comply with ~~713.5~~ 714.5.

~~713.4.1.1~~ 714.4.1.1 **Through penetrations.** *(No change to text)*

~~713.4.1.1.1~~ 714.4.1.1.1 **Installation.** *(No change to text)*

~~713.4.1.1.2~~ 714.4.1.1.2 **Through penetration firestop system.** *(No change to text)*

~~713.4.1.2~~ 714.4.1.2 **Membrane penetrations.** Penetrations of membranes that are part of a horizontal assembly shall comply with Section ~~713.4.1.1.1~~ 714.4.1.1.1 or ~~713.4.1.1.2~~ 714.4.1.1.2. Where floor/ceiling assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the *annular space* is protected either in accordance with Section 713.4.1.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm2) in any 100 square feet (9.3 m2) of ceiling area in assemblies tested without penetrations.
2. Ceiling membrane penetrations of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm2) in area, provided the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm2) in any 100 square feet (9.29 m2) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed 1/8 inch (3.2 mm).
3. Membrane penetrations by electrical boxes of any size or type, which have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed 1/8 inch (3.2 mm) unless *listed* otherwise.
5. The *annular space* created by the penetration of a fire sprinkler, provided it is covered by a metal eschutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.

~~**713.4.1.3 Ducts and air transfer openings.** Penetrations of horizontal assemblies by ducts and air transfer openings shall comply with Section 716.~~

~~713.4.1.4~~ 714.4.1.4 **Disimilar materials.** *(No change to text)*

~~713.4.2~~ 714.4.2 **Nonfire-resistance-rated assemblies.** Penetrations of nonfire-resistance rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance rated roof/ceiling assembly shall meet the requirements of Section 708 or shall comply with Section ~~713.4.2.1~~ 714.4.2.1 or ~~713.4.2.2~~. 714.4.2.2

~~713.4.2.1~~ 714.4.2.1 **Noncombustible penetrating items.** Noncombustible penetrating items that connect not more than ~~three~~ five stories are permitted, provided that the annular space is filled to resist the free passage of flame and the products of combustion with an approved noncombustible material or with a fill, void or cavity material that is tested and classified for use in through-penetration firestop systems.

~~713.4.2.2~~ 714.4.2.2 **Penetrating items.** Penetrating items that connect not more than two stories are permitted, provided that the annular space is filled with an approved material to resist the free passage of flame and the products of combustion.

~~713.5~~ 714.5 **Penetrations in smoke barriers.** Through-penetration firestop systems in *smoke barriers* shall be tested in accordance with the requirements of UL 1479 for air leakage. The ~~air leakage rate~~ L rating of the system measured at 0.30 inch (7.47 Pa) of water in both the ambient temperature and elevated temperature tests, shall not exceed:
5.0 cfm per square foot ($0.025 m^3/ s\ m^2$) of penetration opening for each *through-penetration firestop system*; or
A total cumulative leakage of 50 cfm ($0.024 m^3/s$) for any 100 square feet ($9.3\ m^2$) of wall area, or floor area.

Section ~~714~~ 715
FIRE RESISTANT JOINT SYSTEMS

~~714.6~~ 715.6 **Fire-resistant joint systems in smoke barriers.** Fire-resistant joint systems in smoke barriers, and joints at the intersection of a horizontal *smoke barrier* and an exterior curtainwall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The ~~air leakage rate~~ L rating of the joint system shall not exceed 5 cfm per lineal foot ($0.00775\ m^3/s\ m$) of joint at 0.30 inch (7.47 Pa) of water for both the ambient temperature and elevated temperature test.

Reason: The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: http://www.iccsafe.org/cs/cc/ctc/index.html <http://www.iccsafe.org/cs/cc/ctc/index.html> . Since its inception in April/2005, the CTC has held seventeen meetings - all open to the public.

This proposed change is a result of the CTC's investigation of vertical openings through the Vertical Opening Study Group, which is part of the area of study, entitled "Balanced Fire Protection." The scope of the activity is noted as:

"To investigate what constitutes an acceptable balance between active fire protection and passive fire protection measures with respect to meeting the fire and life safety objectives of the IBC."

The ICC Vertical Opening Study Group re-grouped after the last ICC code development cycle and again looked at the problems and inconsistencies with Chapter 7 of the 2009 IBC. This statement provides a comprehensive explanation of the code proposals drafted and supported by the study group.

Rather than scrap the affected sections and re-write new text, the study group approached this task using mainly surgical fixes. After careful review we felt that the current content in Chapter 7 is fundamentally sound and familiar to all. We believe the inconsistencies that have developed in Chapter 7are mainly due to the initial drafting of the IBC, where language from each of the three legacy code was used, as is. As concepts in the IBC changed, some of these sections became in conflict with one another, obsolete or created "do loops" where the user never finds the correct requirement.

Most of the changes proposed by the study group are editorial in nature and will not change how the code is applied or used. However, as you will see, the study group has also proposed changes separately that are technical in nature. During the review, we felt there are areas in code that, based on fire statistics, should be improved. The study group was very focused on getting a basic proposal in front of the committee and membership that fixes the code editorially. Our main proposal includes only amendments that this group feels are editorial or very minor changes. In addition to the main proposal, we are also proposing technical changes. The study group is in support of both of these; however we did not want to jeopardize the entire effort because of the technical change debate.

Several of the definitions in Section 702 containing specific terms used in Chapter 7 were modified. Mainly the group wanted to emphasize the difference between openings, penetrations and membrane penetrations, although they are all defined globally as vertical openings. The definitions include the term breach to describe the entry into an assembly. This term was currently used in one of the existing definitions and we expanded its use. Our focus was to properly define the terms so that they can be dealt with in a prescriptive manner regarding vertical openings. In addition, the definition of joints was expanded to include linear openings in both rated or non-rated horizontal assemblies. This amendment was needed to be able to guide the code user to what is needed for non-rated assemblies. Other terms were discussed but the term "joint" was already defined in a way that familiar to all. The term L rating was also defined in a manner consistent with the existing standards and listings.

Section 711.4.1 was added to provide the user with guidance for non-rated assemblies in terms of what to do with open joints between the floor assemblies that allow for independent movement of the building in any plane caused by thermal, seismic, wind or any other loading. Basically, if the joint is not concealed within a cavity of a wall or not covered by a floor topping, then it must be sealed or treated with an approved material. Typically, they are covered by a decorative metal or something similar. This proposal will still allow for that method plus many other methods of sealing the vertical opening that this creates.

Section 711.5 was amended to clarify it applies to concealed and unconcealed penetrations. The study group felt that all penetrations needed to be sealed in some fashion, to reduce accelerated structural damage due to a breach in the assembly. Vertical openings should be protected in some way, whether the assembly is rated or non-rated. The added exception provides for joints that meet the exceptions in 715.1 and do not required additional measures.

Section 708 was changed to Section 712 to come after Horizontal Assemblies. The 2009 currently states that all vertical openings require a shaft and then give 17 exceptions to providing that shaft. Realizing that in today's built environment a shaft enclosure is only one of many ways to deal with a vertical opening, we re-named Section 712 (previously Section 708) to Vertical Openings and re-wrote the exceptions to become

available options for dealing with the multitude of various vertical openings encountered within a building. Additionally, we felt that the code should be specific on where to go to find the requirements for each application. And finally we felt users should not be able to use sections that are out of context, such as the example of using current Exception 7 for penetrations.

Section 712.1.8 was further modified to clarify the meaning "required means of egress" and to remind the user that smoke and fire barriers cannot be penetrated with an unprotected vertical opening. Additionally "limited to the same smoke compartment" was removed because the charging statement eliminates I-2 and I-3 occupancies from consideration.

A new sections were added under Section 712.1.17 that provides guidance for joints in non-rated assemblies, previously discussed.
The term "vertical" was added where the current 2009 Code section 708 used just the term "opening". We felt this clarification is consistent with our overall goal to emphasize the difference between vertical openings used for convenience and those vertical openings which are used as penetrations, joint and other applications where the vertical opening is breached by an object and intended to be sealed.

An exception was added to Section 714.4.1.2 Membrane Penetrations that exempts membrane penetrations by non-combustible items in concrete floors. Membrane penetration requirements were not intended to address embedded or cast non-combustible items within concrete floors. This condition has never been shown to be a problem. Reports from fires show that this application performs very well in real fire conditions without compromising the integrity of the structure or allowing fire spread.

The study group believes that these amendments, explained so far are all very minor or editorial in nature and do reflect any new technical requirements.

Definitions: Reason for change

These terms were either added or modified based on previous and current VO study group work.

711.4.1: Reason for change

This section was proposed to address holes in unrated floor ceiling assemblies. After a conference call on 3/31, it was determined that the term "linear opening" needed a definition or change the term.
Further work to address the term is needed. To be completed by the CTC meeting.

712:Reason for changes

Section 708 was identified as being a problem.
This proposal removes the exceptions to providing a shaft a makes them options for vertical openings. No technical changes occurred.
Alternate code change 708.1.8 is a technical change that is being proposed for discussion.

714: Reason for change.

Indentified as a problem at the Balt. MD CTC meeting.
No guidance was given as to how the measurement is to be taken.
This proposal mandates the full height of the wall as one dimension when calculating the 100 sq. ft. This was determined to be the area most affected

A 10 ft. x 10 ft. square was chosen as an easy visual reference for inspectors in the field. This was determined to be area most affected.
An exception was added to stipulate that penetrations (membrane) in solid concrete floors was not considered a membrane penetration.

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

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

ICCFILENAME: HEILSTEDT-FS1-702.1

FS57–09/10
709.4

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

Revise as follows:

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

Exceptions:

(*Exceptions to remain unchanged)*

Reason: This code change simply clarifies the requirement for fireblocking or draftstopping the combustible concealed space between the ceiling and the underside of the deck above in those cases where the fire partitions are not required to be continuous to the underside of the sheathing, deck, or slab above. That condition may occur when the ceiling is part of a fire-resistance-rated floor/ceiling or roof/ceiling assembly or where

allowed by one of the Exceptions. Presently, this section can be misconstrued by implication to allow fire partitions in combustible construction to not be continuous through the ceiling space to the underside of the sheathing, deck, or slab in any situation if they simply stop at the ceiling, because the sentence being revised starts with "If". We believe the proposed revision clarifies this sentence so that its intent is straightforward. In other words, this sentence would only apply where the fire partitions were not required to be continuous through the ceiling space rather than if the builder decided to construct the partitions so that they stopped at the ceiling, even though this section would otherwise require them to be constructed continuous through the ceiling space.

In a previous code development cycle a code change proposal was submitted by a different proponent in an attempt to clarify this issue but it created unintended consequences by the way it was worded. We believe that this code change proposal will accomplish the intent of the previous proponent's code change and make this section easier to interpret and enforce.

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

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

ICCFILENAME: Thornberry-FS1-709.4

FS58–09/10
710.4

Proponent: Gaius G. Nelson, Architect, Nelson•Tremain Partnership, representing self

Revise as follows:

710.4 Continuity. *Smoke barriers* shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exception: Smoke-barrier walls are not required in interstitial spaces where such spaces are ~~designed and constructed with ceilings~~ part of a fire rated assembly that provides resistance to the passage of fire and smoke equivalent to that provided by the smoke barrier walls.

Reason: The current exception as written is not clear because the words "interstitial space" lack definition and lack identification with other code defined terminology. By associating interstitial space as a component of a rated assembly, the intent of the exception is clarified.
As an example, when a smoke barrier wall meets an exterior wall, the smoke barrier ends at the inside face of the exterior wall and does not continue to the exterior face.

Cost Impact: The code change proposal will reduce the cost of construction in situations where the affected parties are unsure about the need to extend smoke barrier walls through interstitial spaces.

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

ICCFILENAME: Nelson-FS1-709.4

FS59–09/10
710.4

Proponent: Sarah A. Rice, CBO, representing self

Revise as follows:

710.4 Continuity. Smoke barriers shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exceptions:

1. Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.
2. Smoke barrier walls enclosing areas of refuge shall not be required to be continuous from outside wall to outside wall.

Reason: Areas of refuge are typically interior rooms. Researching the history of the requirement in Section 1007.6 for areas of refuge to be enclosed in smoke barriers indicates that the proponent and memberships intent was to enclose these rooms in wall assemblies that had both fire resistive and smoke-resistive characteristics and that it was NOT the intent to impose the provision in Section 710.4 for a smoke barrier to extend from outside wall to outside wall.

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

Analysis: Code change proposals FS59 through FS62 address smoke barrier continuity requirements related to areas of refuge or elevator lobbies, or both. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: RICE-FS3-710.4

FS60–09/10
710.4

Proponent: Dave Frable, US General Services Administration, representing the US General Services Administration

Revise as follows:

710.4 Continuity. *Smoke barriers* shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exceptions

1. Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.
2. Smoke barriers enclosing fire service access elevator lobbies, as required by Section 3007.4.2, and occupant evacuation elevator lobbies, as required by Section 3008.11.2, are not required to extend from outside wall to outside wall.

Reason: The original intent of requiring a smoke barrier to enclose the subject elevator lobbies was to provide a construction assemblage that provided a resistance to the passage of smoke into the subject lobby. It was not the intent of the original proposal to require the subject smoke barrier to extend from outside wall to outside wall of the building. Without this exception, the design and construction of the elevator enclosures for fire service access elevators and occupant evacuation elevators will lead to misinterpretations of the original intent of the proposal.

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

Analysis: Code change proposals FS59 through FS62 address smoke barrier continuity requirements related to areas of refuge or elevator lobbies, or both. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: Frable-FS4-710.4

FS61–09/10
710.4

Proponent: Maureen Traxler representing City of Seattle, Seattle Dept of Planning & Development

Revise as follows:

710.4 Continuity. *Smoke barriers* shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exceptions:

1. Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.
2. Smoke barriers used for elevator lobbies in accordance with Section 405.4.3, 3007.4.2 or 3008.11.2 need not extend from outside wall to outside wall.
3. Smoke barriers used for areas of refuge in accordance with Section 1007.6.2 need not extend from outside wall to outside wall.

Reason: Sections 405.4, 3007.4.2 and 3008.11.2 require that lobbies for underground building elevators, fire service access elevators and occupant evacuation elevators be enclosed with smoke barriers. Section 1007.6.2 requires that each area of refuge be separated from the remainder of the story by a smoke barrier. However, the continuity requirements of 710.4 are not practical for areas of refuge and elevator lobbies due to typical floor plan layout, and don't provide additional safety. As long as each area of refuge or elevator lobby is separated from other areas by smoke barriers, the intent of the code is met. Other code sections require separation by smoke barriers as well, but continuity requirements are appropriate in those cases: Sections 407.4 & 408.6 for sleeping and treatment rooms for patients or residents in I-2 & I-3 occupancies and Section 422.2 for ambulatory health care facilities.

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

Analysis: Code change proposals FS59 through FS62 address smoke barrier continuity requirements related to areas of refuge or elevator lobbies, or both. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: TRAXLER-FS2-710.4

FS62–09/10
710.4, 710.5

Proponent: Dominic Marinelli, United Spinal Assoc, representing self

Revise as follows:

710.4 Continuity. *Smoke barriers* shall form an effective membrane continuous from outside wall to outside wall and from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required *fire-resistance rating* of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction.

Exceptions:

1. Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.
2. Smoke barriers that form an area of refuge in accordance with Section 1007 shall be permitted to extend to the fire-resistance-rated stairway or elevator shaft enclosure or to another smoke barrier wall.
3. Smoke barriers that form an elevator lobby in accordance with Sections 405.4.3, 3007.4.2 and 3008.11.2 shall be permitted to extend to the fire-resistance rated elevator shaft enclosure.

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

Exceptions:

1. In Group I-2, where doors are installed across *corridors*, a pair of opposite-swinging doors without a center mullion shall be installed having vision panels with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested. The doors shall be close fitting within operational tolerances, and shall not have undercuts in excess of 3/4-inch, louvers or grilles. The doors shall have head and jamb stops, astragals or rabbets at meeting edges and shall be automatic closing by smoke detection in accordance with Section 715.4.8.3. Where permitted by the door manufacturer's listing, positive-latching devices are not required.
2. In Group I-2, horizontal sliding doors installed in accordance with Section 1008.1.4.3 and protected in accordance with Section 715.

3. Where smoke barriers form an area of refuge in accordance with Section 1007, the elevator doors or stairway doors are not required to meet the opening protectives for smoke barriers
4. Where smoke barriers form an elevator lobby in accordance with Sections 405.4.3, 3007.4.2 and 3008.11.2 the elevator doors are not required to meet the opening protectives for smoke barriers.

Reason: Smoke barriers are used to form areas of refuge and elevator lobbies in addition to there application for forming smoke compartments. The intent of this proposal is to clarify the requirements when this situation occurs,

When a smoke barrier forms an area of refuge immediately in front of an elevator with stand-by power or an enclosed exit stairway, the intent is that the smoke enclosure form a protected area. The shaft enclosure requirements for the walls exceed smoke barrier provisions, and therefore provide a higher level of protection. With an area of refuge in place at each story, the smoke will be kept out of the shaft by the area of refuge, therefore, the danger of smoke coming up the shaft and into the area of refuge is minimal. If the elevator doors are required to meet smoke barrier protection requirements, there can be technical issues that will impair using the elevator for assisted rescue. The elevator and stair doors will still be required to meet the fire resistance rating required for the shaft.

In rare cases, the area of refuge can be located in front of an open elevator (i.e., elevator in an atrium) or at an open stairway. In these situations, the smoke barrier must form a room, and the continuity requirements should allow for this situation.

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

Analysis: Code change proposals FS59 through FS62 address smoke barrier continuity requirements related to areas of refuge or elevator lobbies, or both. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: Marinelli-FS1-710.4

FS63–09/10
711.5, 711.6, 711.7

Proponent: Sarah A. Rice, CBO, representing self

Add new text as follows:

711.5 Openings. Openings in smoke partitions shall comply with Sections 711.5.1 and 711.5.2.

711.5.1 Windows. Windows in smoke partitions shall be sealed to resist the free passage of smoke or be automatic-closing upon detection of smoke. ~~Doors in smoke partitions shall comply with this section.~~

711.5.2 Doors. Doors in smoke partitions shall comply with Sections 711.5.2.1 through 711.5.2.3.

711.5.2.1 ~~711.5.1~~ Louvers. Doors in smoke partitions shall not include louvers.

711.5.2.2 ~~711.5.2~~ Smoke and draft control doors. Where required elsewhere in the code, doors in smoke partitions shall meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.015424m3/(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.

711.5.2.3 ~~711.5.3~~ Self- or automatic-closing doors. Where required elsewhere in the code, doors in smoke partitions shall be self- or automatic-closing by smoke detection in accordance with Section 715.4.8.3.

711.6 Penetrations ~~and joints~~. The space around penetrating items ~~and in joints~~ shall be filled with an *approved* material to limit the free passage of smoke.

711.7 Joints. Joints shall be filled with an *approved* material to limit the free passage of smoke.

~~711.7~~ 711.8 Ducts and air transfer openings. *(No change to text)*

Reason: The proposed changes create uniformity with how openings, joints, penetrations and air-transfer and duct openings are addressed in other sections.

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-FS1F-711

FS64–09/10
712 (New)

Proponent: Sarah A. Rice, CBO, representing self

Add new text as follows:

Section 712
NONFIRE-RESISTANCE RATED INTERIOR PARTITIONS AND BARRIERS

712.1 General. Nonfire-resistance rated interior partitions shall comply with this section.

712.2 Materials. The walls shall be of materials permitted by the building type of construction.

712.3 Openings. Unless serving as a smoke partition or required by other sections of this code, openings in nonfire-resistance rated interior partitions shall be not be required to be protected.

712.4 Penetrations. Unless serving as a smoke partition or required by other sections of this code, penetrations into or through a nonfire-resistance rated interior partitions shall be not be required to be protected.
712.5 Joints. Unless serving as a smoke partition or required by other sections of this code, joints between nonfire-resistance rated interior partitions shall be not be required to be protected.

712.6 Ducts and air transfer openings. Unless serving as a smoke partition or required by other sections of this code, ducts and air-transfer openings in nonfire-resistance rated interior partitions shall be not be required to be protected.

(Renumber subsequent sections)

Reason: This proposal introduces a new section on nonfire-resistance rated interior partitions. Often questions regarding construction and levels of protection arise when the wall of a corridor is allowed to not be fire rated because the building is spinklered. When the wall is fire rated it is considered to be a fire partition and has to be constructed as such, but how are the walls that are not fire rated to be constructed? And when an exit stairway is allowed to unenclosed, such as in an open parking garage, but the designer chooses to enclose the stair (maybe for weather purposes) what now are the requirements for the walls around that stair?

This proposal seeks to provide the answer to these questions.

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 FS1e NEW 712

FS65–09/10
712.3

Proponent: Lee Kranz representing Washington Association of Building Officials (WABO), Technical Code Development Committee

Revise as follows:

SECTION 712
FIRE-RESISTANCE RATED HORIZONTAL ASSEMBLIES

712.1 General. Floor and roof assemblies required to have a fire-resistance rating shall comply with this section. Nonfire-resistance-rated floor and roof assemblies shall comply with Section 713.4.2

712.2 Materials. The floor and roof assemblies shall be of materials permitted by the building type of construction.

712.3 Fire-resistive rating. The fire-resistance rating of floor and roof assemblies shall be a minimum of 1-hour fire-resistance rated construction but not be less than that required by the building type of construction. Where the floor assembly separates mixed occupancies, the assembly shall have a fire-resistance rating of not less than that required by Section 508.3.3 based on the occupancies being separated. Where the floor assembly separates a single occupancy into different fire areas, the assembly shall have a fire-resistance rating of not less than that required by

Section 707.3.9. ~~Horizontal assemblies separating dwelling units in the same building and horizontal assemblies separating sleeping units in the same building shall be a minimum of 1-hour fire-resistance-rated construction.~~

Exception: Dwelling unit and sleeping unit separations in buildings of Type IIB, IIIB and VB construction shall have fire-resistance ratings of not less than ½ hour in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

Reason: Adding "Fire Resistance Rated" to the title clarifies that this section only applies to rated horizontal assemblies. The changes in 712.3 are needed to provide coordination with Section 420.3. Currently, Section 420.3 refers to Section 712 for horizontal assemblies but Section 712 does not include scoping for "floor assemblies separating dwelling or sleeping units from other occupancies contiguous to them in the same building" but does include the scoping for "horizontal assemblies separating dwelling units in the same building and horizontal assemblies separating sleeping units in the same building". Deleting the scoping text from 712.3 eliminates the redundancy with Section 420.3. Adding the minimum 1-hour fire-resistance rated construction to Section 712.3 provides clarity similar to that provided in Section 709.3 for Fire Partitions which is also referenced in Section 420.2.

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

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

ICCFILENAME: KRANZ-FS1-712.3

FS66 –09/10
712

Proponent: Sarah A. Rice, CBO, representing self

1. Revise as follows:

SECTION 712
FLOOR AND ROOF ~~HORIZONTAL~~ ASSEMBLIES

712.1 General. Floor and roof assemblies ~~required to have a *fire-resistance rating*~~ shall comply with this section. ~~Nonfire-resistance-rated floor and roof assemblies shall comply with Section 713.4.2~~.

712.2 Materials. The floor and roof assemblies shall be of materials permitted by the building type of construction.

(Section 712.3 relocated to Section 715.5.1 and 715.5.2)

(Sections 712.3.1, 702.3.2, and 712.3.3 relocated to Sections 715.5.3, 715.5.4, and 715.5.5 respectively)

~~**712.4**~~ **712.3 Continuity.** Floor and roof assemblies shall be continuous without openings, penetrations or joints except as permitted by this section and Sections 708.2, 713.4, 714 and 1022.1. ~~Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Unprotected skylights shall not be permitted in roof assemblies required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required *fire-resistance rating* of the *horizontal assembly* supported.~~

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

1. ~~Horizontal~~ fire-resistance rated floor and roof assemblies at the separations of incidental uses as specified by Table 508.2.5, provided the required *fire-resistance rating* does not exceed 1 hour.
2. ~~Horizontal~~ fire-resistance rated floor and roof assemblies at the separations of *dwelling units* and *sleeping units* as required by Section 420.3.
3. ~~Horizontal~~ fire-resistance rated floor and roof assemblies at *smoke barriers* constructed in accordance with Section 710.

712.4 Nonfire-resistance rated floor and roof horizontal assemblies. Nonfire-resistance rated floor and roof assemblies shall comply with Sections 712.4.1 through 712.4.4.

712.4.1 Openings. Openings in nonfire-resistance rated floor and roof assemblies shall comply with Section 708.

712.4.2 Penetrations. Penetrations in or through nonfire-resistance rated *floor and roof assemblies* shall comply with Section 713.4.2.

712.4.3 Joints. Joints made in or between in nonfire-resistance rated *floor and roof* shall comply with Section 708.

712.4.4 Ducts and air transfer openings. Penetrations in nonfire-resistance rated floor and roof *assemblies* by ducts and air transfer openings shall comply with Section 708.

712.5 Fire-resistance rated floor and roof assemblies. Floor and roof assemblies required to have a fire-resistance rating shall comply with Sections 712.5.1 through 712.5.9.

712.5.1 ~~712.3~~ Fire-resistance rating. The *fire-resistance rating* of floor and roof assemblies shall not be less than that required by the building type of construction.

712.5.2 Floor assemblies. Where the floor assembly separates mixed occupancies, the assembly shall have a *fire-resistance rating* of not less than that required by Section 508.4 based on the occupancies being separated. Where the floor assembly separates a single occupancy into different *fire areas*, the assembly shall have a *fire-resistance rating* of not less than that required by Section 707.3.9.

Where the floor assembly ~~*Horizontal assemblies* separating~~ separates *dwelling units* in the same building ~~and *horizontal assemblies* separating~~ or *sleeping units* in the same building, the assembly shall have a minimum fire resistance rating of 1-hour ~~fire-resistance-rated construction~~.

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

~~712.3.1~~ 712.5.3 Ceiling panels. Where the weight of lay-in ceiling panels, used as part of fire-resistance-rated floor/ceiling or roof/ceiling assemblies, is not adequate to resist an upward force of 1 pound per square foot (48 Pa), wire or other *approved* devices shall be installed above the panels to prevent vertical displacement under such upward force.

~~712.3.2~~ 712.5.4 Access doors. Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and roof/ceiling assemblies provided such doors are tested in accordance with ASTM E 119 or UL 263 as horizontal assemblies and labeled by an *approved agency* for such purpose

~~712.3.3~~ 712.5.5 Unusable space. In 1-hour fire-resistance-rated floor assemblies, the ceiling membrane is not required to be installed over unusable crawl spaces. In 1-hour fire-resistance-rated roof assemblies, the floor membrane is not required to be installed where unusable *attic* space occurs above.

712.5.6 Openings. Openings in fire-resistance rated floor and roof *assemblies* shall comply with Section 708 or 712.5.6.1.

> **Exception.** Skylights in a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Unprotected skylights shall not be permitted in roof assemblies required to be fire-resistance rated in accordance with Section 704.10. The supporting construction shall be protected to afford the required *fire-resistance rating* of the *horizontal assembly* supported.

~~712.8~~ 712.5.6.1 Floor fire door assemblies. Floor *fire door* assemblies used to protect openings in fire-resistance-rated floors shall be tested in accordance with NFPA 288, and shall achieve a *fire-resistance rating* not less than the assembly being penetrated. Floor *fire door* assemblies shall be labeled by an *approved agency*. The *label* shall be permanently affixed and shall specify the manufacturer, the test standard and the *fire-resistance rating*.

~~712.5~~ 712.5.7 Penetrations. Penetrations of ~~*horizontal*~~ fire-resistance rated floor and roof *assemblies* shall comply with Section 713.

> **Exception.** Penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. The supporting construction shall be protected to afford the required *fire-resistance rating* of the floor and roof *assembly* supported.

~~712.6~~ **712.5.8 Joints.** Joints made in or between ~~*horizontal*~~ fire-resistance rated floor and roof *assemblies* shall comply with Section 714. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.

~~712.7~~ **712.5.9 Ducts and air transfer openings.** Penetrations in ~~*horizontal*~~ fire-resistance rated floor *assemblies* by ducts and air transfer openings shall comply with Section 716.

(Section 712.8 relocated to Section 712.5.6.1)

~~712.9~~ **712.6 Smoke barrier.** Where ~~*horizontal*~~ fire-resistance rated floor or roof *assemblies* are required to resist the movement of smoke by other sections of this code in accordance with the definition of *smoke barrier*, the ~~horizontal~~ fire-resistance rated floor or roof assembly shall comply with 712.6.1 through 712.X.

712.6.1 Penetrations and joints. Penetrations and joints in such ~~*horizontal*~~ fire-resistance rated floor or roof *assemblies* required to resist the movement of smoke shall be protected as required for *smoke barriers* in accordance with Sections 713.5 and 714.6.

712.6.2 Elevator shafts. Regardless of the number of *stories* connected by elevator shaft enclosures, doors located in elevator shaft enclosures that penetrate the a ~~*horizontal*~~ fire-resistance rated floor or roof *assembly* required to resist the movement of smoke shall be protected by enclosed elevator lobbies complying with Section 708.14.1.

712.6.3 Openings. Openings through ~~*horizontal*~~ fire-resistance rated floor or roof *assemblies* shall be protected by shaft enclosures complying with Section 708. ~~*Horizontal*~~ Fire-resistance rated floor or roof *assemblies* shall not be allowed to have unprotected vertical openings.

Reason: This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits.

Chapter 7 is currently titled "Fire and Smoke Protection Features" and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies. Through a series of code changes, including tone, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change addresses Section 712 Horizontal Assemblies. Currently the provisions contained in Section 712 only apply to "horizontal" assemblies (which are defined in Section 702 as "fire-resistance rated floor and roof assemblies), the only help the user gets in addressing nonfire-resistance rated floor and roof assemblies is a single sentence in 712.1 that says – "Nonfire-resistance-rated floor and roof assemblies shall comply with Section 713.4.2." Which only tells the user how to address penetrations in the nonfire-resistance rated floor and roof assemblies – how about materials and continuity?

This proposal is intended to expand on the application of the section making it applicable to both fire-resistance rated and non -resistance rated floor and roof assemblies. The majority of technical provisions are unchanged, and are noted as such. The following outlines the major changes to Section 712:

Change the title to Floor and Roof Assemblies – because
Revisions to make the section applicable to both fire rated and nonfire rated floor and roof assemblies.
Create new section Introduce new language to address nonfire-resistance rated floor and roof assemblies.
Create new section that contains the provisions unique to fire resistance rated floor and roof assemblies (most provisions are currently in the 2009 IBC).
Replace the term "horizontal" with "floor and roof assembly" as the section now contains provisions for both non-fire resisance rated and fire-resistance rated floor and roof assemblies., While the term "horizontal assembly" is defined as being a fire-resistance rated assembly, with the proposed expanded scope of the section, using the terms "nonfire-resistance rated floor and roof assemblies" and "fire-resistance rated floor and roof assemblies" would seem to makes it easier for the user to see which provisions apply to which types of assemblies.

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-FS1h-712

FS67–09/10
713 (New)

Proponent: Sarah A. Rice, CBO, representing self

Add new text as follows:

SECTION 713
PENETRATIONS OF FIRE RESISTANCE RATED INTERIOR VERTICAL ASSEMBLIES

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

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

713.3 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible items beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the wall is maintained.

713.4 Fire-resistance-rated walls. Through penetrations of fire walls, fire-barriers, fire partitions and smoke barriers required to have a fire-resistance rating shall comply with Sections 713.4.1. Membrane penetrations of fire walls, fire-barriers, and fire partitions required to have a fire-resistance rating shall comply with Sections 713.4.2.

714.3.1 Through penetrations of fire-resistance rated walls. Through penetrations of fire-resistance-rated walls shall comply with Section 713.3.1.1 or 713.3.1.2.

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

1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (0.0929 m_2), concrete, grout or mortar is permitted where it is installed the full thickness of the wall or the thickness required to maintain the *fire-resistance rating*; or
2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated.

714.3.1.1 Testing. Through penetrations of fire-resistance-rated fire walls, fire-barriers and fire partitions and smoke barriers shall be installed as tested in an approved fire-resistance-rated assembly.

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

1. 5.0 cfm per square foot (0.025m_3 / s ¸ m_2) of penetration opening for each *through-penetration firestop system*; or
2. A total cumulative leakage of 50 cfm (0.024m_3/s) for any 100 square feet (9.3 m_2) of wall area, or floor area.

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

713.3.2 Membrane penetrations fire-resistance-rated walls. Membrane penetrations of fire-resistance-rated fire walls, fire-barriers, fire partitions and smoke barriers shall comply with 713.3.1. Where walls or partitions are required to have a fire resistance rating recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m2) in area, provided the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m2) in any 100 square feet (9.29m2) of wall area. The *annular space* between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following:

1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities;
1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;
1.3. By solid fireblocking in accordance with Section 717.2.1;
1.4. By protecting both outlet boxes with *listed* putty pads; or
1.5. By other *listed* materials and methods.

2. Membrane penetrations by *listed* electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm) unless *listed* otherwise. Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
2.1. By the horizontal distance specified in the listing of the electrical boxes;
2.2. By solid fireblocking in accordance with Section 717.2.1;
2.3. By protecting both boxes with *listed* putty pads; or
2.4. By other *listed* materials and methods.
3. Membrane penetrations by electrical boxes of any size or type, which have been *listed* as part of a wall pening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.
4. Membrane penetrations by boxes other than electrical boxes, provided such penetrating items and the *annular space* between the wall membrane and the box, are protected by an *approved membrane penetration* firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water, and shall have an F and T rating of not less than the required *fire-resistance rating* of the wall penetrated and be installed in accordance with their listing.
5. The *annular space* created by the penetration of an automatic sprinkler, provided it is covered by a metal escutcheon plate

(Renumber subsequent sections)

Reason: This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits. The acceptance of only this code change will result in redundancy in the code at worst. Chapter 7 is currently titled “Fire and Smoke Protection Features” and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies. Through a series of code changes, including tone, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change introduces a new section - Section 713 Penetrations of Fire Resistance Rated Interior Vertical Assemblies. Currently the regulations for penetrations in ALL types of assemblies are contained in a single section in the 2009 IBC – Section 713 Penetrations. It is often difficult to find exactly which penetration provisions apply to which type of assembly in the current Section 713. By extracting the provisions that only apply to fire rated vertical assemblies (walls) and putting them in their own section, confusion should be minimized.

The majority of technical provisions contained in new Section 713 are taken verbatim from current Section 713. The difference is that this section is ONLY intended to contain the regulations for vertical assemblies that are fire-resistance rated.

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

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

ICCFILENAME: RICE-FS 1i-713

FS68–09/10
713.4.1.1.2

Proponent: John Valiulis, representing Hilti, Inc.

Revise as follows:

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

Exceptions:

1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating.
2. Floor penetrations consisting of power cables or busbars do not require a T-rating.

Reason: To add an additional exception to the T-rating requirements for power-carrying penetrating items that cannot freely be insulated, and thus cannot practically achive a T-rating.

Justification: For a floor though-penetration to obtain a T-rating equivalent to the F-rating, as required by article 713.4.1.1.2, its temperature on the non-fire side (unexposed side) of the test assembly must have a temperature rise of no more than 325 degrees F above the ambient temperature. With a typical ambient temperature of 75F, this means that the penetrating item must maintain a temperature below 400F throughout the fire test, even with fire-side temperatures of 1700F after 1-hour of fire test duration, and 1850F after 2-hours of fire test duration. The method by which the T-rating objective is normally accomplished for anything but very small cross-section through-penetrating items is by providing sufficient thermal insulation on the penetrating item above the floor, or below the floor, or often both when the penetrating item is a good conductor of heat.

What makes power cables and busbars accomplish their intended function of conducting significant electrical currents is that they are made of a large enough cross section of a good conducting metal such as copper or aluminum. The property that makes the power cables and busbars good conductors of large amounts of electrical power also make them equally good conductors of heat. For this reason, busbars and power cables typically exceed the allowable temperature limit needed to achieve a T-rating within a ¼ hour or less in an ASTM E814/UL1479 fire test, as can easily be seen by perusing the through-penetration firestop system listings within the UL Fire Resistance Directory.

To try to achieve a T-rating equivalent to the F-rating, power cables and busbars could theoretically be covered with sufficient thermal insulation above and/or below the floor to prevent heat from being transferred from the environment to and from the conductor. But this would contradict numerous provisions of the National Electrical Code, which prohibits these power-conducting elements from being encapsulated within thermal insulation. Heat generated by the conduction of power must be free to be released to the surrounding environment. For power cables, one could theoretically use de-rating factors to compensate for the added thermal insulation by significantly reducing the power carried by the cable as compared to its design rating. However, this could add substantial cost due to the need for larger or more numerous cables to compensate for the de-rating. For busbars, the option of wrapping in thermal insulation does not exist.

The reality is that the need for the T-rating to equal the F-rating for power cables and busbars is not really being enforced throughout the country. Firestop system manufacturers have not had any such thermally-insulated power conductors tested to see if any could achieve the F=T rating, since there is a good awareness that such systems would never be used and the testing cost would be wasted. Code inspectors seem to be similarly aware of the electrical hazards that could be created by wrapping power conductors with thermal insulation, and are therefore not demanding the F=T rating for the power conductors.

This proposed code change would allow the code to recognize a valid exception which is already being allowed by code inspectors nationwide.

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

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

ICCFILENAME: VALIULIS-FS2-713.4.1.1.2

FS69–09/10
713.4.1.1.2

Proponent: John Valiulis, representing Hilti, Inc.

Revise as follows:

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

Exceptions:

1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating.
2. Floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a horizontal assembly do not require a T rating

Reason: To clarify that when a floor or tub drain is contained within the horizontal concealed space of a floor/ceiling assembly, the T rating required as part of the listed fire stop system can be omitted.

Purpose: To add an additional exception to the T-rating requirements for floor and tub drains through floors.

Justification: The horizontal concealed space of a *Horizontal Assembly* (i.e. a floor/ceiling assembly with a membrane) is comparable in construction and protection, to that of a wall cavity in the current exception for floor penetrations contained and located within the cavity of a wall above the floor or below the floor. Thus, the level of protection proposed here is comparable to that provided in the current exception to 713.4.1.1.2.

Floor drains, tub drains and shower drains would never be located such that the pipe penetrating the floor would be within the cavity of a wall. Thus, those drains would not be able to use the existing T-rating exception. Some jurisdictions are already applying the logic of the existing exception to include the situation of penetrating items concealed above the membrane of a floor/ceiling assembly, as there is some intuitive recognition that the situations really are analogous.

The alternative to allowing the additional exception proposed here is to remain with the status quo, and thus require the T-rating (thermal insulation) to be provided from insulation applied on the penetrating item below the floor. With a floor drain or shower drain application, there is no way to provide any insulation on the penetrating item above the floor. Thus, the amount of insulation required on the drain pipe below the floor is substantial. The attached photo shows such a code-compliant installation.

Given that the risk of igniting combustibles above the floor from contact with a floor drain or tub/shower drain is minutely small, and that the tested and listed solutions for providing a T-rating for these drain pipes is an obvious case of overkill in situations where the penetrating item would not see the full heat of a fire anyway, the committee is urged to accept this reasonable exception.

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

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

ICCFILENAME: VALIULIS-FS3-713.4.1.1.2

FS70–09/10

713.3.1.1, 713.4.1.1.2, 716.3.1 (IMC 607.3.1)

Proponent: Julius Ballanco, PE, JB Engineering and Code Consulting, PC, representing In-O-Vate Technologies, Inc.

Revise as follows:

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

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

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

716.3.1 (IMC 607.3.1) Damper testing. Dampers shall be listed and bear the label of an approved testing agency indicating compliance with the standards in this section. Fire dampers shall comply with the requirements ofUL555. In addition, fire dampers shall be tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have a T-rating of not less than rating of the penetrating assembly. Only fire dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire. Smoke dampers shall comply with the

requirements of UL 555S. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S. Ceiling radiation dampers shall comply with the requirements of UL 555C.

Reason: During the last code change cycle, I attempted to remove the requirement for a "T rating" on a horizontal penetration of a membrane by a box. The opposition provided a compelling argument supporting the inclusion of a "T rating" that the membership supported.

While I did not agree with the testimony supporting a "T rating," I do support consistency in the code. If the arguments for "T ratings" are compelling for a box membrane penetration, then the same argument would support a "T rating" for a full horizontal penetration and a duct penetration.

If a duct penetrated a membrane, there is currently no requirement for a "T rating." How can this be allowed in the code when a smaller box penetration of a membrane must have a "T rating?" This does not make sense. Both membrane penetrations present the same hazard.

The same can be said for any full penetration. How can we ignore the "T rating?" Clearly, without a "T rating" the penetration is not equivalent to an ASTM E119 assembly. Again, this was the argument used during the last code change cycle.

There needs to be consistency in the Building Code. I have an alternative change to Section 713.3.2 that removes the "T rating" for horizontal penetration of a membrane by a box. Either this change or that change must be accepted for the code to be consistent.

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

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

ICCFILENAME: BALLANCO-FS1-713.3.1.2

FS71–09/10
713.3.2

Proponent: Julius Ballanco, PE, JB Engineering and Code Consulting, PC, representing In-O-Vate Technologies, Inc.

Revise as follows:

713.3.2 Membrane penetrations. Membrane penetrations shall comply with Section 713.3.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire-resistance will not be reduced.

Exceptions:

(Exceptions not shown remain unchanged)

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

Reason: I submitted this change to the last cycle when the "T rating" was added to the membrane box penetration. This was not a requirement in the 2006 edition of the IBC. Traditionally, the IBC has never required a "T rating" for horizontal penetrations. This is the first requirement for such a rating.

It is my opinion that the code should be consistent. I have submitted another change that adds the "T rating" for all horizontal penetrations. Either all horizontal penetrations or no horizontal penetrations should be required to have a "T rating." The code cannot be inconsistent.

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

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

ICCFILENAME: BALLANCO-FS2-713.3.2.doc

FS72–09/10
713.2 (New)

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

Add new text as follows:

713.2 Contractor Qualifications. In buildings having occupied floors located more than 75 feet (22860 mm) above the lowest level of fire department vehicle access, through-penetration firestop systems shall be installed by contractors that are approved or qualified for such installations under programs administered by approved agencies, such as FM Approvals or Underwriters Laboratories.

(Renumber subsequent sections)

Reason: Proper Design, Installation, Inspection and Maintenance of Firestop Systems is critical to fire and life safety in buildings because firestopping is used in everything from egress corridors to separation of spaces. Firestopping is a highly technical industry, requiring specialized knowledge at the firestop contracting firm in the office and field to analyze conditions on construction documents and / or on-site, select the appropriate firestop system(s) from UL, FM, Intertek and other directories, then match the systems to penetrating items and annular spaces as they exist in the field, with no variances from the systems allowed. If the system is not installed to the parameters in the design, the 'system' may or may not work when called upon by fire. This code change proposal addresses installation of through penetration and membrane firestop systems to zero-tolerance parameters of the classified and listed firestop design. The concept has been proposed in the past and some felt the scope was too broad. Therefore, the scope of the proposed requirement has been limited to high-rise buildings.

There are approval or qualification programs administered by approved agencies such as FM Approvals and Underwriters Laboratories for contractors who install materials that become firestop systems. Any contractor (trade or specialty firestop contractor) installing firestop systems can be approved or qualified to the programs administered by these agencies. The programs are similar to ISO 9000 that is used for the manufacturing environment, but adjusted for the construction environment. Successful completion means that the company has policies and procedures in place sufficient to control operations resulting in installations conforming to the listed firestop system.

Any firm is eligible to obtain FM Approval and or UL Qualification. With costs ranging from $6000 to $10000 for the initial audit and about $3000 annually for ongoing audits by UL & FM, the cost is less than many contractors would spend on advertising in the "Blue Book" or in entertainment. Experience shows that the cost can be recovered through the benefits of improved processes and reduced errors on firestopping projects.

Firestopping by a contractor firm who has been approved or qualified means that the firm has the processes in place in the company culture to handle the zero tolerance installation program needed for firestop systems for fire and life safety. The audits by FM & UL test the company's ability to install fire and life safety through penetration firestop systems to these requirements, through extensive review of the company procedures.

Below is a summary of what it takes for a contractor company to become FM 4991 Approved and / or UL Qualified:

-Designated Responsible Individual (DRI) – Each firm employs a DRI who has passed an industry exam based on the Firestop Contractors International Association's Firestop Industry Manual of Practice, FM Standard FM 4991, Standard for the Approval of Firestop Contractors, and - or the UL Qualified Firestop Contractor Program requirements, as well as selection of firestop systems from directories matched to field conditions.

-Quality Audits – FM & UL then audit the firestop processes of the company:

--Initial Audit - The process to install firestopping is very technical, and needs attention to detail. The specialty firestop contractor firm or trade contractor firm has their company quality manual audited and approved or qualified by an auditor from either FM Approvals or Underwriters Laboratories to be recognized by the approved agency as a 'certified contractor'. This is a very robust, truly independent inspection of the contractors' firestop systems selection, submittal, and installation and inspection processes by FM & UL Auditors. Auditors also visit a project site to verify that the procedures are actually in place throughout the company. Audits of the company include every discipline from training of employees, systems selection and communications to – from the field.

--Annual Audit – FM and or UL visit the firm to review the company's procedures annually to verify continued compliance to the FM 4991 Standard or UL Qualified Firestop Contractor Program. These visits are key to continued success of the firm's quality management system.

Firestopping is a vital part of effective compartmentation. When installation is not performed correctly, it can cause delays of certificate of occupancy, reducing building owners' revenue streams and create a fire and life safety risk. FM Approved and UL Qualified Firestop Contractors can lower the risk of non compliant firestopping through a company culture that has embraced the quality management system approach through their company culture.

Firestopping installation is a process that is knowledge sensitive, and requires a company (not just a worker) that has the quality management systems culture ingrained in it's operations and, more importantly, it's people. Plus, the production of the quality assurance manual at the company helps them gather important insight into company operations through self assessment followed up by a full audit by a credible, independent organization, FM & UL

There are many contractor firms who have been approved or qualified, that cover most of the US, Dubai, with many more in process of becoming approved or qualified throughout the world. Since firestopping is lightweight, and knowledge travels, so too can FM Approved and UL Qualified Firestop Contractor Firms travel to serve local needs competitively, throughout North America. Contractors have even exported the process know how to the Middle East including the United Arab Emirates, and beyond. For more information, visit http://www.fcia.org to view Specialty Firestop Contractor Firms who have become FM 4991 Approved or UL Qualified, and see the approval and qualification documents to understand how the contractor company can get involved in the programs.

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

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

ICCFILENAME: KOFFELL-FS5-713.2 NEW

FS73–09/10
713.2 (New)

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

Add new text as follows:

713.2 Contractor Qualifications. In buildings assigned an Occupancy Category of III or IV in accordance with Table 1604.5,, through-penetration firestop systems shall be installed by contractors that are approved or qualified for such installations under programs administered by approved agencies, such as FM Approvals or Underwriters Laboratories.

(Renumber subsequent sections)

Reason: Proper Design, Installation, Inspection and Maintenance of Firestop Systems is critical to fire and life safety in buildings because firestopping is used in everything from egress corridors to separation of spaces. Firestopping is a highly technical industry, requiring specialized knowledge at the firestop contracting firm in the office and field to analyze conditions on construction documents and / or on-site, select the

appropriate firestop system(s) from UL, FM, Intertek and other directories, then match the systems to penetrating items and annular spaces as they exist in the field, with no variances from the systems allowed. If the system is not installed to the parameters in the design, the 'system' may or may not work when called upon by fire. This code change proposal addresses installation of through penetration and membrane firestop systems to zero-tolerance parameters of the classified and listed firestop design. The concept has been proposed in the past and some felt the scope was too broad. Therefore, the scope of the proposed requirement has been limited to those buildings that represent a substantial hazard to human life in the event of a system failure or that are considered to be essential facilities in accordance with Table 1604.5.

There are approval or qualification programs administered by approved agencies such as FM Approvals and Underwriters Laboratories for contractors who install materials that become firestop systems. Any contractor (trade or specialty firestop contractor) installing firestop systems can be approved or qualified to the programs administered by these agencies. The programs are similar to ISO 9000 that is used for the manufacturing environment, but adjusted for the construction environment. Successful completion means that the company has policies and procedures in place sufficient to control operations resulting in installations conforming to the listed firestop system.

Any firm is eligible to obtain FM Approval and or UL Qualification. With costs ranging from $6000 to $10000 for the initial audit and about $3000 annually for ongoing audits by UL & FM, the cost is less than many contractors would spend on advertising in the "Blue Book" or in entertainment. Experience shows that the cost can be recovered through the benefits of improved processes and reduced errors on firestopping projects.

Firestopping by a contractor firm who has been approved or qualified means that the firm has the processes in place in the company culture to handle the zero tolerance installation program needed for firestop systems for fire and life safety. The audits by FM & UL test the company's ability to install fire and life safety through penetration firestop systems to these requirements, through extensive review of the company procedures.

Below is a summary of what it takes for a contractor company to become FM 4991 Approved and / or UL Qualified:

-Designated Responsible Individual (DRI) – Each firm employs a DRI who has passed an industry exam based on the Firestop Contractors International Association's Firestop Industry Manual of Practice, FM Standard FM 4991, Standard for the Approval of Firestop Contractors, and - or the UL Qualified Firestop Contractor Program requirements, as well as selection of firestop systems from directories matched to field conditions.

-Quality Audits – FM & UL then audit the firestop processes of the company:

--Initial Audit - The process to install firestopping is very technical, and needs attention to detail. The specialty firestop contractor firm or trade contractor firm has their company quality manual audited and approved or qualified by an auditor from either FM Approvals or Underwriters Laboratories to be recognized by the approved agency as a 'certified contractor'. This is a very robust, truly independent inspection of the contractors' firestop systems selection, submittal, and installation and inspection processes by FM & UL Auditors. Auditors also visit a project site to verify that the procedures are actually in place throughout the company. Audits of the company include every discipline from training of employees, systems selection and communications to – from the field.

--Annual Audit – FM and or UL visit the firm to review the company's procedures annually to verify continued compliance to the FM 4991 Standard or UL Qualified Firestop Contractor Program. These visits are key to continued success of the firm's quality management system.

Firestopping is a vital part of effective compartmentation. When installation is not performed correctly, it can cause delays of certificate of occupancy, reducing building owners' revenue streams and create a fire and life safety risk. FM Approved and UL Qualified Firestop Contractors can lower the risk of non compliant firestopping through a company culture that has embraced the quality management system approach through their company culture.

Firestopping installation is a process that is knowledge sensitive, and requires a company (not just a worker) that has the quality management systems culture ingrained in it's operations and, more importantly, it's people. Plus, the production of the quality assurance manual at the company helps them gather important insight into company operations through self assessment followed up by a full audit by a credible, independent organization, FM & UL

There are many contractor firms who have been approved or qualified, that cover most of the US, Dubai, with many more in process of becoming approved or qualified throughout the world. Since firestopping is lightweight, and knowledge travels, so too can FM Approved and UL Qualified Firestop Contractor Firms travel to serve local needs competitively, throughout North America. Contractors have even exported the process know how to the Middle East including the United Arab Emirates, and beyond. For more information, visit http://www.fcia.org to view Specialty Firestop Contractor Firms who have become FM 4991 Approved or UL Qualified, and see the approval and qualification documents to understand how the contractor company can get involved in the programs.

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

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

ICCFILENAME: KOFFELL-FS6-713.2 NEW

FS74–09/10
713.2.1 (New)

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

Add new text as follows:

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

713.2.1 Alternative Methods. Where the configuration of a penetrating item or group of items is such that listed penetration firestop system tested in accordance with ASTM E 814 or UL 1479 is determined to be non-existent and reconfiguration of the penetrations or fire resistance rated assembly is determined to be impractical or impossible, alternative methods for maintaining the integrity of the required fire–resistance rating of the assembly shall be permitted to be established by any of the following methods or procedures.

1. Designs documented in approved sources but not in public directories.
2. Calculations performed in an approved manner.
3. Engineering analysis based on a comparison of approved penetration firestop systems tested in accordance with ASTM E 814 or UL 1479 that extrapolate specific similar features from these systems and combine them to formulate an equivalent fire resistant rated assembly as specifically designated by the manufacturer's technical representative of the systems specified within the referenced approved penetration firestop system.
4. Alternative protection methods as allowed by Section 104.11

Reason: The purpose of this code change proposal is to clarify a part of the code that is confusing in the field to enforce. Although there are over 8000 classified systems in the Underwriters Laboratories Fire Resistance Directory and thousands more in Intertek, FM Approvals and other laboratories listings, there are still configurations that appear at project sites that have no qualified system listed in a directory. This is when our firestop contracting industry searches for advice from the manufacturers headquarters technical personnel to seek a determination that a combination of systems that closely resembles the situation be suggested for approval from the manufacturer, that is documented by the manufacturer for submittal.

This service is performed by manufacturer's qualified technical personnel who understand the fire performance of these products in systems, and use characteristics found in similar systems to make a determination about suitability for use of the products in the specific application. These suggestions are submitted by firestop manufacturer's technical staff through the contractor for approval. Using knowledge from those who fire test the products frequently and understand their limitations, these manufacturer's technical personnel reference the closest possible tested system(s) to determine an appropriate method that provides a system closest to the field condition.

This code language is needed to set minimum requirements for how these determinations, (also known as Engineering Judgments, or Equivalent Fire Resistance Rated Assemblies) are created, and who at the company should be responsible for writing these determinations of suitability for use in specific applications.

Companies are structured different ways, with many titles for field sales people. Those with the most experience with fire testing products at companies, and the most removed from the sales process seems to be the manufacturer's technical personnel at headquarters locations. This code language is needed to provide the building official transparency in the process when presented engineering judgments from the industry…only if a listed system cannot be found in the directories from any manufacturer…even if it means switching manufacturers for a few applications.

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

Analysis: Standards ASTM E814 and UL 1479 are currently referenced in the I-codes.

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

ICCFILENAME: KOFFELL-FS2-713.2.1 NEW

FS75–09/10
713.4.1.2

Proponent: Tim Pate, City and County of Broomfield, representing the Colorado Chapter ICC Code Change Committee

Revise as follows:

713.4.1.2 Membrane penetrations. Penetrations of membranes that are part of a horizontal assembly shall comply with Sections 713.4.1.1.1 or 713.4.1.1.2. Where floor/ceiling assemblies are required to have a fire resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

(Exceptions 1-5 remain unchanged)

6. The ceiling membrane of 1 and 2 hour fire resistance rated horizontal assemblies is permitted to be interrupted with the double wood top plate of a fire resistance wall assembly provided that all penetrating items through the double top plates are protected in accordance with Section 713.4.1.1.1 or 713.4.1.1.2.

Reason: This code change will add a new exception to section 712.4.1.2 which will allow the ceiling membrane of a 1 or 2 hour fire rated floor/ceiling or roof/ceiling assembly to be interrupted by a double wood top plate of a fire rated wall. All penetrations of the top plates would have to be protected by approved through penetration firestop systems. This would codify the typical construction that we see with Type VA construction where the wood framed walls extend up and attach directly to the underside of wood floor joists/trusses or roof joists/trusses for structural requirements. Non fire rated wall top plates would not be allowed to interrupt the drywall membrane of the floor/ceiling or roof/ceiling.
Section 711.4 would technically require this ceiling membrane to be continuous in these areas but it would be impossible to install this drywall on top of load bearing walls since the drywall would end up being crushed when building is fully loaded. This code change would get the IBC in line with the UL testing criteria and general notes. This code change would allow what we already see on every Type VA building.

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

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

ICCFILENAME: PATE-FS1-713.4.1.2

FS76–09/10
713.4.2.3 (New)

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

1. Revise as follows:

713.4.2 Nonfire-resistance-rated assemblies. Penetrations of nonfire-resistance-rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance-rated roof/ceiling assembly shall meet the requirements of Section 708 or shall comply with Section 713.4.2.1 ~~or~~ , 713.4.2.2., or 713.4.2.3.

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

712.4.2.2 Penetrating items. Penetrating items that connect not more than two stories are permitted, provided that the annular space is filled with an approved material to resist the free passage of flame and the products of combustion.

2. Add new text as follows:

713.4.2.3 Unlimited stories. Penetrating items shall be permitted provided the annular space is filled with a fill, void, cavity material, or device that is tested and classified for use in through-penetration firestop systems.

Reason: Currently the Code limits the number of stories connected without a shaft when the floor is not required to have a fire resistance rating. The Code currently permits the use of approved materials. While fill, void, or cavity materials and devices tested for use in through penetration firestop systems would likely be approved materials, the proposed language clearly states that such materials shall be permitted without specific approval. The proposed language will also allow such materials without a height restriction. However, Table 503 limits most buildings with non-rated floor assemblies to heights less than three stories unless an automatic sprinkler system is provided.

A void or cavity material that is tested and classified for use in through penetration firestop systems is an effective method for preventing the passage of fire and toxic gas. Very often this limitation in the code relating to the number of stories of penetrating items is overlooked because the floor is not required to be fire resistant and as a result penetrations are left inadequately protected.

To require a shaft enclosure for what could be a very limited quantify of penetrations of a non-rated floor assembly is excessive when other acceptable means to protect the penetrations are available.

Cost Impact: Much more cost effective methodology.

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

ICCFILENAME: KOFFELL-FS8-713.4.2 NEW

FS77–09/10
702.1, 713.5

Proponent: Bob Eugene, representing Underwriters Laboratories Inc

1. Add new definition as follows:

702.1 Definitions. The following words and terms shall, for the purposes of this chapter, and as used elsewhere in this code, have the meanings shown herein**.**

L RATING. The air leakage rate of a through-penetration firestop system when tested in accordance with UL 1479, or a fire-resistant joint system when tested in accordance with UL 2079.

2. Revise as follows:

713.5 Penetrations in smoke barriers. Penetrations in *smoke barriers* shall be protected by an approved through-penetration firestop systems installed and tested in accordance with the requirements of UL 1479 for air leakage. The ~~air leakage rate~~ L rating of the ~~penetration assemblies~~ system measured at 0.30 inch (7.47 Pa) of water in both the ambient temperature and elevated temperature tests, shall not exceed:

1. 5.0 cfm per square foot (0.025 $m^3/s\ m^2$) of penetration opening for each *through-penetration firestop system*; or
2. A total cumulative leakage of 50 cfm (0.024 m^3/s) for any 100 square feet (9.3 m^2) of wall area, or floor area.

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

Reason: This proposal accomplishes three things. First, it introduces a definition for L rating that matches the format used for the definitions of F rating and T rating. L rating is a common industry term, and is referenced in approximately 1500 UL systems. Second, Section 713.5 is being revised to clarify that the through-penetration firestop system includes the leakage rating, not the penetration itself. The proposed wording is similar to that included in Section 713.4.1.1.2. A reference to the L rating is also provided. Similarly Section 714.6 is being revised to indicate the joint system, not the joint itself, must comply with the specified air leakage ratings, and the reference to the L rating is also provided.

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

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

ICCFILENAME: EUGENE-FS4-713.5

FS78–09/10
714 (New)

Proponent: Sarah A. Rice, CBO, representing self

Add new text as follows:

SECTION 714
PENETRATIONS OF HORIZONTAL ASSEMBLIES

714.1 Scope. The provisions of this section shall govern the materials and methods of construction used to protect penetrations of and through horizontal assemblies.

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

714.3 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible items beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the wall is maintained.

714.4 Fire-resistance-rated horizontal assemblies. Through penetrations of fire-resistance-rated horizontal assemblies shall be protected with a shaft enclosure constructed in accordance with Sections 715 or in accordance with 714.4.1. Membrane penetrations of fire-resistance-rated horizontal assemblies shall be protected in accordance with Section 714.4.2. Penetrations into or through horizontal assemblies that also serve as smoke barriers shall comply with 714.4.3.

Exceptions:

1. Through penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistancerated floor assembly where the *annular space* is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected toASTME 119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 mm2) in any 100 square feet (9.3 m2) of floor area.

2. Through penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the *fire-resistance rating*. The penetrating items shall not be limited to the penetration of a single concrete floor, provided the area of the opening through each floor does not exceed 144 square inches (92 900 mm2).
3. Through penetrations by *listed* electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.
4. A shaft enclosure is not required for openings totally within an individual residential *dwelling unit* and connecting four *stories* or less.
5. A shaft enclosure is not required in a building equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 for an escalator opening or *stairway* that is not a portion of the *means of egress* protected according to Item 5.1 or 5.2.
    5.1. Where the area of the floor opening between *stories* does not exceed twice the horizontal projected area of the escalator or *stairway* and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Groups B and M, this application is limited to openings that do not connect more than four *stories*.
    5.2. Where the opening is protected by *approved* power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a *fire-resistance rating* of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release there from.
6. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable and vents protected in accordance with Section 713.4.
7. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 716.6. Grease ducts shall be protected in accordance with the *International Mechanical Code*.
8. In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.
9. A shaft enclosure is not required for *approved* masonry chimneys where *annular space* is fireblocked at each floor level in accordance with Section 717.2.5.
10. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening or an air transfer opening that complies with the following:
    10.1. Does not connect more than two *stories*.
    10.2. Is not part of the required *means of egress* system.
    10.3. Is not concealed within the construction of a wall or a floor/ceiling assembly.
    10.4. Is not open to a *corridor* in Group I and R occupancies.
    10.5. Is not open to a *corridor* on nonsprinklered floors in any occupancy.
    10.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
    10.7. Is limited to the same smoke compartment.
11. A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.
12. A shaft enclosure is not required for floor openings between a *mezzanine* and the floor below.
13. A shaft enclosure is not required for joints protected by a *fire-resistant joint system* in accordance with Section 714.
14. A shaft enclosure shall not be required for floor openings created by unenclosed *stairs* or ramps in accordance with Exception 3 or 4 in Section 1016.1.
15. Floor openings protected by floor *fire doors* in accordance with Section 712.8.
16. In Group I-3 occupancies, a shaft enclosure is not required for floor openings in accordance with Section 408.5.
17. A shaft enclosure is not required for elevator hoistways in open or enclosed parking garages that serve only the parking garage.
18. In open or enclosed parking garages a shaft enclosure is not required to enclose mechanical exhaust or supply duct systems when such duct system is contained within and serves only the parking garage.
19. Where permitted by other sections of this code.

714.4.1 Through penetrations. Through penetrations of fire-resistance-rated *horizontal assemblies* shall comply with Section 71.4.1.1 or 714.4.1.2.

713.4.1.1. Installation. *Through penetrations* shall be installed as tested in the *approved* fire-resistance-rated assembly.

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

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

714.4.2 Membrane penetrations. Penetrations of membranes that are part of a *horizontal assembly* shall comply with Section 714.4.2.1 or 714.4.2.2. Where floor/ceiling assemblies are required to have a *fire-resistance rating*, recessed fixtures shall be installed such that the required *fire resistance* will not be reduced.

Exceptions:

1. *Membrane penetrations* by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the *annular space* is protected either in accordance with Section 713.4.1.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm2) in any 100 square feet (9.3 m2) of ceiling area in assemblies tested without penetrations.
2. Ceiling membrane penetrations of maximum 2-hour *horizontal assemblies* by steel electrical boxes that do not exceed 16 square inches (10 323 mm2) in area, provided the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm2) in any 100 square feet (9.29 m2) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed 1/8 inch (3.2 mm).
3. Membrane penetrations by electrical boxes of any size or type, which have been *listed* as part of an opening protective material system for use in *horizontal assemblies* and are installed in accordance with the instructions included in the listing.
4. *Membrane penetrations* by *listed* electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The *annular space* between the ceiling membrane and the box shall not exceed 1/8 inch (3.2 mm) unless *listed* otherwise.
5. The *annular space* created by the penetration of a fire sprinkler, provided it is covered by a metal eschutcheon plate.

713.4.2.1. Installation. Membrane *penetrations* shall be installed as tested in the *approved* fire-resistance-rated assembly.

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

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

714.4.3 Penetrations in smoke barriers. In addition to the requirements of Section 714.4.1 through 714.4.2, penetrations in *smoke barriers* shall be tested in accordance with the requirements of UL 1479 for air leakage. The air leakage rate of the penetration assemblies measured at 0.30 inch (7.47 Pa) of water in both the ambient temperature and elevated temperature tests, shall not exceed:

1. 5.0 cfm per square foot (0.025m3 / s ¸ m2) of penetration opening for each *through-penetration firestop system*; or
2. A total cumulative leakage of 50 cfm (0.024m3/s) for any 100 square feet (9.3 m2) of wall area, or floor area.

714.5 Nonfire-resistance-rated horizontal assemblies Penetrations of nonfire-resistance-rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance rated roof/ceiling assembly shall be protected with a shaft enclosure constructed in accordance with Sections 715, or be protected in accordance with Section 714.5.1 or Section 714.5.2.

Exceptions:

1. A shaft enclosure is not required for openings totally within an individual residential *dwelling unit* and connecting four *stories* or less.
2. A shaft enclosure is not required in a building equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 for an escalator opening or *stairway* that is not a portion of the *means of egress* protected according to Item 5.1 or 5.2.
   2.1. Where the area of the floor opening between *stories* does not exceed twice the horizontal projected area of the escalator or *stairway* and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Groups B and M, this application is limited to openings that do not connect more than four *stories*.
   2.2. Where the opening is protected by *approved* power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a *fire-resistance rating* of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.
3. A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable and vents protected in accordance with Section 713.4.
4. A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 716.6. Grease ducts shall be protected in accordance with the *International Mechanical Code*.
5. In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.
6. A shaft enclosure is not required for *approved* masonry chimneys where *annular space* is fireblocked at each floor level in accordance with Section 717.2.5.
7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening or an air transfer opening that complies with the following:
   7.1. Does not connect more than two *stories*.
   7.2. Is not part of the required *means of egress* system.
   7.3. Is not concealed within the construction of a wall or a floor/ceiling assembly.
   7.4. Is not open to a *corridor* in Group I and R occupancies.
   7.5. Is not open to a *corridor* on nonsprinklered floors in any occupancy.
   7.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.
   7.7. Is limited to the same smoke compartment.
8. A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.
9. A shaft enclosure is not required for floor openings between a *mezzanine* and the floor below.
10. A shaft enclosure is not required for joints protected by a *fire-resistant joint system* in accordance with Section 714.
11. A shaft enclosure shall not be required for floor openings created by unenclosed *stairs* or ramps in accordance with Exception 3 or 4 in Section 1016.1.
12. Floor openings protected by floor *fire doors* in accordance with Section 712.8.
13. In Group I-3 occupancies, a shaft enclosure is not required for floor openings in accordance with Section 408.5.
14. A shaft enclosure is not required for elevator hoistways in open or enclosed parking garages that serve only the parking garage.
15. In open or enclosed parking garages a shaft enclosure is not required to enclose mechanical exhaust or supply duct systems when such duct system is contained within and serves only the parking garage.
16. Where permitted by other sections of this code.

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

714.5.2 Penetrating items. Penetrating items that connect not more than two *stories* are permitted, provided that the *annular space* is filled with an *approved* material to resist the free passage of flame and the products of combustion.

(Renumber subsequent sections)

Reason. This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits. The acceptance of only this code change will result in redundancy in the code at worst. Chapter 7 is currently titled "Fire and Smoke Protection Features" and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies. Through a series of code changes, including tone, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change introduces a new section - Section 714 Penetrations of Horizontal Assemblies. Currently the regulations for penetrations in horizontal assemblies are contained in a single section in the 2009 IBC – Section 713 Penetrations. It is often difficult to find exactly which penetration provisions apply to which type of assembly in the current Section 713. By extracting the provisions that only apply to horizontal assemblies (floors and roofs) and putting them in their own section, confusion should be minimized. In addition the section is further broken down into regulations for fire-resistance rated horizontal assemblies and nonfire-resistance rated assemblies.

Also it should be noted that the exceptions to protect a "hole' in a floor or roof which are currently found in Section 708.2 have been brought into this new section. This is the parent section and that is where any generic exceptions should occur.

The majority of technical provisions contained in new Section 714 are taken verbatim from current Section 713 (and some from 708.2). The difference is that this section is ONLY intended to contain the regulations for horizontal assemblies.

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-FS1j-714

FS79–09/10
708.1, 708.2, 708.3, 708.4

Proponent: Sarah A. Rice, CBO, representing self

Revise as follows:

708.1 General. The provisions of this section shall apply to shafts required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies. ~~Shaft enclosures shall be constructed as *fire barriers* in accordance with Section 707 or *horizontal assemblies* in accordance with Section 712, or both~~.

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

~~**Exceptions:**~~

1. ~~A shaft enclosure is not required for openings totally within an individual residential *dwelling unit* and connecting four *stories* or less.~~
2. ~~A shaft enclosure is not required in a building equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 for an escalator opening or *stairway* that is not a portion of the *means of egress* protected according to Item 2.1 or 2.2.~~
   - 2.1. ~~Where the area of the floor opening between *stories* does not exceed twice the horizontal projected area of the escalator or *stairway* and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Groups B and M, this application is limited to openings that do not connect more than four *stories*.~~
   - 2.2. ~~Where the opening is protected by *approved* power-operated automatic shutters at every penetrated floor. The shutters shall be of noncombustible construction and have a *fire-resistance rating* of not less than 1.5 hours. The shutter shall be so constructed as to close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3 and shall completely shut off the well opening. Escalators shall cease operation when the shutter begins to close. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s) and shall be equipped with a sensitive leading edge to arrest its progress where in contact with any obstacle, and to continue its progress on release therefrom.~~
3. ~~A shaft enclosure is not required for penetrations by pipe, tube, conduit, wire, cable and vents protected in accordance with Section 713.4.~~
4. ~~A shaft enclosure is not required for penetrations by ducts protected in accordance with Section 716.6. Grease ducts shall be protected in accordance with the *International Mechanical Code*.~~
5. ~~In other than Group H occupancies, a shaft enclosure is not required for floor openings complying with the provisions for atriums in Section 404.~~
6. ~~A shaft enclosure is not required for *approved* masonry chimneys where *annular space* is fireblocked at each floor level in accordance with Section 717.2.5.~~

~~7. In other than Groups I-2 and I-3, a shaft enclosure is not required for a floor opening or an air transfer opening that complies with the following:~~
~~7.1. Does not connect more than two *stories*.~~
~~7.2. Is not part of the required *means of egress* system.~~
~~7.3. Is not concealed within the construction of a wall or a floor/ceiling assembly.~~
~~7.4. Is not open to a *corridor* in Group I and R occupancies.~~
~~7.5. Is not open to a *corridor* on nonsprinklered floors in any occupancy.~~
~~7.6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.~~
~~7.7. Is limited to the same smoke compartment.~~
~~8. A shaft enclosure is not required for automobile ramps in open and enclosed parking garages constructed in accordance with Sections 406.3 and 406.4, respectively.~~
~~9. A shaft enclosure is not required for floor openings between a *mezzanine* and the floor below.~~
~~10. A shaft enclosure is not required for joints protected by a *fire-resistant joint system* in accordance with Section 714.~~
~~11. A shaft enclosure shall not be required for floor openings created by unenclosed *stairs* or ramps in accordance with Exception 3 or 4 in Section 1016.1.~~
~~12. Floor openings protected by floor *fire doors* in accordance with Section 712.8.~~
~~13. In Group I-3 occupancies, a shaft enclosure is not required for floor openings in accordance with Section 408.5.~~
~~14. A shaft enclosure is not required for elevator hoistways in open or enclosed parking garages that serve only the parking garage.~~
~~15. In open or enclosed parking garages a shaft enclosure is not required to enclose mechanical exhaust or supply duct systems when such duct system is contained within and serves only the parking garage.~~
~~16. Where permitted by other sections of this code.~~

708.2 ~~708.3~~ Materials. The shaft enclosure shall be of materials permitted by the building type of construction. [Contents unchanged]

708.3 ~~708.4~~ Fire-resistance rating. Shaft enclosures shall have a *fire-resistance rating* of not less than 2 hours where connecting four *stories* or more, and not less than 1 hour where connecting less than four *stories*. The number of *stories* connected by the shaft enclosure shall include any basements but not any *mezzanines*. Shaft enclosures shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours. Shaft enclosures shall meet the requirements of Section 703.2.1. [Contents unchanged]

(Renumber subsequent sections)

Reason. This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits.

Chapter 7 is currently titled “Fire and Smoke Protection Features” and yet it contains provisions for nonfire- and nonsmoke-resistance rated assemblies. Through a series of code changes, including this one, it is hoped that it becomes clear that Chapter 7 regulates both fire/smoke and nonfire/nonsmoker-resistance rated vertical and horizontal (floors, roofs and walls) assemblies.

This code change addresses Sections 708 (Shaft Enclosures) and is a companion change to the new Section being proposed for *Penetrations of Horizontal Assemblies*.

Enclosing an opening or penetration in a floor is only one of the ways a designer may choose to protect that “hole.” The 2nd sentence in Section 708.1 is redundant as it is stated again in the section and the exceptions in Section 708.2 are not needed as they have been moved to the parent new section. The scoping provisions for when a shaft is required is now in the new section on Penetrations of Horizontal Assemblies. This section will now only have the provisions for construction of shafts.

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-FS1k-708.1

FS80–09/10
714.1

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

Revise as follows:

714.1 General. Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 714.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.

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

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 708.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors and ramps within open and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, respectively
6. Mezzanine floors.
7. Interior ~~W~~walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119 or UL 263.

Reason:
Purpose: Although the existing language addresses' "Fire-resistant joint systems shall not be required for joints **in** all of the following locations", as currently written, the existing exception has sometimes been misinterpreted to apply to joints located **between** a rated floor slab and an exterior wall assembly, whether the exterior wall is fire resistance rated or not. This exception needs to clarify that item 7 of this article applies to interior wall.

Justification: The current language creates some conflict with the requirements in 714.4 for Exterior curtain wall/floor intersection. Perimeter fire barrier systems described in 714.4 are a unique item, distinct from conventional fire resistant joints in that they have a separate test methodology that applies to them. The existing exceptions were intended to address interior walls permitted to have unprotected openings. Exterior walls have unique requirements associated with them, and are often permitted to have unprotected openings not as a result of the presence or absence of a fire resistance rating, but because of their location on the exterior of a building. The charging language for the Exception clearly indicates it is addressing fire resistant joint **"in"** these types of assemblies. While the perimeter joints are "**between"** a horizontal and vertical assembly, there has been some confusion that needs clarification.

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

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

ICCFILENAME: CRIMI-FS5-714.1

FS81–09/10
714.1

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing Metal Building Manufacturers Association

Revise as follows:

714.1 General. Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an *approved fire-resistant joint system* designed to resist the passage of fire for a time period not less than the required *fire-resistance rating* of the wall, floor or roof in or between which it is installed. *Fire-resistant joint systems* shall be tested in accordance with Section 714.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.

Exceptions:

1. *Fire-resistant joint systems* shall not be required for joints in all of the following locations:
   1.1. Floors within a single *dwelling unit*.
   1.2. Floors where the joint is protected by a shaft enclosure in accordance with Section 708.
   1.3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
   1.4. Floors within malls.
   1.5. Floors and ramps within open and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, respectively.
   1.6. *Mezzanine* floors.
   1.7. Walls that are permitted to have unprotected openings.
   1.8. Roofs where openings are permitted.
   1.9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119 or UL 263.
2. The voids created at the intersection of a fire-resistance-rated wall assembly and a non-fire-resistance-rated roof assembly shall be filled, but are not required to comply with the requirements of this section. The material or system used to fill the void shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases.

Reason: The IBC defines joints as being an opening that occurs between two fire-resistance rated assemblies. However, in many instances there are openings/void spaces that occur between a fire-resistance rated assembly and a non-fire resistance rated assembly. One very common type of this situation occurs when a fire-resistance rated wall assembly terminates at the underside of a non-fire-resistance rated roof assembly in a low-rise metal building. This code change proposal has been submitted so as to clarify the requirements for these types of situations.

The Metal Building Manufacturers Association requested a formal interpretation on this matter. Interpretation 34-08 dated February 20, 2009 states that Section 713.1 (2006 edition) did not apply to these intersections. Thus, this Code proposal is just adding new language to address the findings of the Code interpretation and therefore enhance the code.

It is understood that this new Exception does not remove the continuity requirements for these types of assemblies as specified in the appropriate Sections of the Code.

Also, the industry has specifically inserted the requirements for installation so as to address the proper installation of the materials and systems used in this application.

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

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

ICCFILENAME: BEITEL-FS3-714.1.doc

FS82–09/10
714.1, 714.1.1 (New)

Proponent: Tony Crimi, A.C. Consulting Solutions Inc., representing North American Insulation Manufacturers' Association (NAIMA)

Revise as follows:

714.1 General. Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which it is installed. Fire-resistant joint systems shall be tested in accordance with Section 714.3. ~~The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.~~

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

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 708.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors and ramps within open and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, respectively

6. Mezzanine floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119 or UL 263

714.1.1 Curtain wall assembly. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.

714.4 Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an *approved* system to prevent the interior spread of fire. Such systems shall be securely installed and tested in accordance with ASTM E 2307 to prevent the passage of flame for the time period at least equal to the *fire-resistance rating* of the floor assembly and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.

714.4.1 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance- rated floor or floor/ceiling assemblies shall be sealed with an *approved* material or system to retard the interior spread of fire and hot gases between *stories*.

Reason: Although the existing language addresses' "Fire-resistant joint systems shall not be required for joints in all of the following locations", as currently written, the existing exception has sometimes been misinterpreted to apply to joints located **between** a rated floor slab and an exterior wall assembly, whether the exterior wall is fire resistance rated or not. This exception needs to clarify that item 7 of this article applies to interior wall.

The current language creates some conflict with the requirements in 714.4 for Exterior curtain wall/floor intersection. Perimeter fire barrier systems described in 714.4 are a unique item, distinct from conventional fire resistant joints in that they have a separate test methodology that applies to them. The existing exceptions were intended to address interior walls permitted to have unprotected openings. Exterior walls have unique requirements associated with them, and are often permitted to have unprotected openings not as a result of the presence or absence of a fire resistance rating, but because of their location on the exterior of a building. The charging language for the Exception clearly indicates it is addressing fire resistant joint "in" these types of assemblies. While the perimeter joints are "between" a horizontal and vertical assembly, there has been some confusion that needs clarification.

Cost Impact: The proposal does not increase the cost of construction beyond that intended by the Code.

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

ICCFILENAME: CRIMI-FS7-714.1

FS83–09/10
714.1.1 (New)

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

Add new text as follows:

714.1 General. Joints installed in or between fire-resistance- rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an *approved fire-resistant joint system* designed to resist the passage of fire for a time period not less than the required *fire-resistance rating* of the wall, floor or roof in or between which it is installed. *Fire-resistant joint systems* shall be tested in accordance with Section 714.3. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 714.4.

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

1. Floors within a single *dwelling unit*.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 708.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors and ramps within open and enclosed parking garages or structures constructed in accordance with Sections 406.3 and 406.4, respectively.
6. *Mezzanine* floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.

9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E 119 or UL 263.

714.1.1 Alternative Methods. Where the configuration of a joint is such that a listed joint firestop system or perimeter fire containment system tested in accordance with ASTM E 1966 or UL 2079 or ASTM E 2307, is determined to be non-existent alternative methods for maintaining the integrity of the required fire–resistance rating of the assembly shall be permitted to be established by any of the following methods or procedures.

1. Designs documented in approved sources but not in public directories.
2. Calculations performed in an approved manner.
3. Engineering analysis based on a comparison of approved penetration firestop systems tested in accordance with ASTM E 1966 or UL 2079 and or ASTM E 2307 that extrapolate specific similar features from these systems and combine them to formulate an equivalent fire resistant rated assembly as specifically designated by the manufacturer's technical representative of the systems specified within a referenced approved penetration firestop system
4. Alternative protection methods as allowed by Section 104.11

Reason: The purpose of this code change proposal is to clarify a part of the code that is confusing in the field to enforce. Although there are over 8000 classified systems in the Underwriters Laboratories Fire Resistance Directory and thousands more in Intertek, FM Approvals and other laboratories listings, there are still configurations that appear at project sites that have no qualified system listed in a directory. This is when the firestop contracting industry searches for advice from the manufacturer's technical personnel to seek a determination that a combination of systems that closely resembles the situation be suggested for approval based upon documentation from the manufacturer.

This service is performed by manufacturer's qualified technical personnel who understand the fire performance of these products in systems, and use characteristics found in similar systems to make a determination about suitability for use of the products in the specific application. These suggestions are submitted by firestop manufacturer's technical staff through the contractor for approval. Using knowledge from those who fire test the products frequently and understand their limitations, these manufacturers technical personnel reference the closest possible tested system(s) to determine an appropriate method that provides a system closest to the field condition.

This code language is needed to set minimum requirements for how these determinations, (also known as Engineering Judgments, or Equivalent Fire Resistance Rated Assemblies) are created, and who at the company should be responsible for writing these determinations of suitability for use in specific applications.

Companies are structured different ways, with many titles for field sales people. Those with the most experience with fire testing products at companies, and the most removed from the sales process seem to be the manufacturers technical personnel often located at headquarter locations. This code language is needed to provide the building official transparency in the process when presented engineering judgments from the industry…only if a listed system cannot be found in the directories from any manufacturer…even if it means switching manufacturers for a few applications.

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

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

ICCFILENAME: KOFFELL-FS3-714.1.1 NEW

FS84–09/10
714.2 (New)

Proponent: William E. Koffel, Koffel Associates, Inc, representing Firestop Contractors International Association

Revise as follows:

714.2 Installation. Fire-Resistant Joint Systems shall be securely installed in accordance with the listing criteria in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

Reason: In 714.2, a very important section on installation, there is no real statement that communicates the objective of joint systems. Joint systems are not systems until they've been installed in accordance with the listed joint system from an approved source such as Underwriter's Laboratories, FM Approvals, Intertek and others. Similar language already exists in the Code fore through penetration firestop systems.

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

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

ICCFILENAME: KOFFELL-FS4-714.2 NEW

FS85–09/10
714.2.1 (New)

Proponent: William E. Koffel, Koffel Associates, Inc., representing Firestop Contractors International Association

Add new text as follows:

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

714.2.1 Installation details, field installation. In buildings assigned an Occupancy Category of III or IV in accordance with Table 1604.5, fire-resistant joint systems shall be installed by contractors that are approved or qualified for such installations under programs administered by approved agencies, such as FM Approvals or Underwriters Laboratories.

Reason: Proper Design, Installation, Inspection and Maintenance of Joint Systems is critical to fire and life safety in building. This is a highly technical industry, requiring specialized knowledge at the firestop contracting firm in the office and field to analyze conditions on construction documents and / or on-site, select the appropriate firestop system(s) from UL, FM, Intertek and other directories, then match the systems to penetrating items and annular spaces as they exist in the field, with no variances from the systems allowed. If the system is not installed to the parameters in the design, the 'system' may or may not work when called upon by fire. This code change proposal addresses installation of joint systems to zero-tolerance parameters of the classified and listed design. And, *fire-resistant joint systems* are very complicated systems, where the contractor firm installing must have special qualifications to accomplish the goal of limiting fire and smoke spread from the compartment of origin. The concept has been proposed in the past and some felt the scope was too broad. Therefore, the scope of the proposed requirement has been limited to those buildings that represent a substantial hazard to human life in the event of a system failure or that are considered to be essential facilities in accordance with Table 1604.5.

There are approval or qualification programs administered by approved agencies such as FM Approvals and Underwriters Laboratories for contractors who install materials that become firestop systems. Any contractor (trade or specialty firestop contractor) installing firestop systems can be approved or qualified to the programs administered by these agencies. The programs are similar to ISO 9000 that is used for the manufacturing environment, but adjusted for the construction environment. Successful completion means that the company has policies and procedures in place sufficient to control operations resulting in installations conforming to the listed firestop system.

Any firm is eligible to obtain FM Approval and or UL Qualification. With costs ranging from $6000 to $10000 for the initial audit and about $3000 annually for ongoing audits by UL & FM, the cost is less than many contractors would spend on advertising in the "Blue Book" or in entertainment. Experience shows that the cost can be recovered through the benefits of improved processes and reduced errors on firestopping projects.

Firestopping by a contractor firm who has been approved or qualified means that the firm has the processes in place in the company culture to handle the zero tolerance installation program needed for firestop systems for fire and life safety. The audits by FM & UL test the company's ability to install fire and life safety through penetration firestop systems to these requirements, through extensive review of the company procedures.

Below is a summary of what it takes for a contractor company to become FM 4991 Approved and / or UL Qualified:

-Designated Responsible Individual (DRI) – Each firm employs a DRI who has passed an industry exam based on the Firestop Contractors International Association's Firestop Industry Manual of Practice, FM Standard FM 4991, Standard for the Approval of Firestop Contractors, and - or the UL Qualified Firestop Contractor Program requirements, as well as selection of firestop systems from directories matched to field conditions.

-Quality Audits – FM & UL then audit the firestop processes of the company:

--Initial Audit - The process to install firestopping is very technical, and needs attention to detail. The specialty firestop contractor firm or trade contractor firm has their company quality manual audited and approved or qualified by an auditor from either FM Approvals or Underwriters Laboratories to be recognized by the approved agency as a 'certified contractor'. This is a very robust, truly independent inspection of the contractors' firestop systems selection, submittal, and installation and inspection processes by FM & UL Auditors. Auditors also visit a project site to verify that the procedures are actually in place throughout the company. Audits of the company include every discipline from training of employees, systems selection and communications to – from the field.

--Annual Audit – FM and or UL visit the firm to review the company's procedures annually to verify continued compliance to the FM 4991 Standard or UL Qualified Firestop Contractor Program. These visits are key to continued success of the firm's quality management system.

Firestopping is a vital part of effective compartmentation. When installation is not performed correctly, it can cause delays of certificate of occupancy, reducing building owners' revenue streams and create a fire and life safety risk. FM Approved and UL Qualified Firestop Contractors can lower the risk of non compliant firestopping through a company culture that has embraced the quality management system approach through their company culture.

Firestopping installation is a process that is knowledge sensitive, and requires a company (not just a worker) that has the quality management systems culture ingrained in it's operations and, more importantly, it's people. Plus, the production of the quality assurance manual at the company helps them gather important insight into company operations through self assessment followed up by a full audit by a credible, independent organization, FM & UL

There are many contractor firms who have been approved or qualified, that cover most of the US, Dubai, with many more in process of becoming approved or qualified throughout the world. Since firestopping is lightweight, and knowledge travels, so too can FM Approved and UL Qualified Firestop Contractor Firms travel to serve local needs competitively, throughout North America. Contractors have even exported the process know how to the Middle East including the United Arab Emirates, and beyond. For more information, visit http://www.fcia.org to view Specialty Firestop Contractor Firms who have become FM 4991 Approved or UL Qualified, and see the approval and qualification documents to understand how the contractor company can get involved in the programs.

Cost Impact: There is no cost impact to this code change proposal. Approved or qualified firms assign the correct value to firestopping systems installed to the listed system.

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

ICCFILENAME: KOFFELL-FS7-714.1

FS86–09/10
714.2.1 (New)

Proponent: William E. Koffel, Koffel Associates, Inc., representing Firestop Contractors International Association

Add new text as follows:

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

714.2.1 Installation details, field installation. In buildings having occupied floors located more than 75 feet (22860 mm) above the lowest level of fire department vehicle access, fire-resistant joint systems shall be installed by contractors that are approved or qualified for such installations under programs administered by approved agencies, such as FM Approvals or Underwriters Laboratories.

Reason: Proper Design, Installation, Inspection and Maintenance of Joint Systems is critical to fire and life safety in building. This is a highly technical industry, requiring specialized knowledge at the firestop contracting firm in the office and field to analyze conditions on construction documents and / or on-site, select the appropriate firestop system(s) from UL, FM, Intertek and other directories, then match the systems to penetrating items and annular spaces as they exist in the field, with no variances from the systems allowed. If the system is not installed to the parameters in the design, the 'system' may or may not work when called upon by fire. This code change proposal addresses installation of joint systems to zero-tolerance parameters of the classified and listed design. And, *fire-resistant joint systems* are very complicated systems, where the contractor firm installing must have special qualifications to accomplish the goal of limiting fire and smoke spread from the compartment of origin. The concept has been proposed in the past and some felt the scope was too broad. Therefore, the scope of the proposed requirement has been limited to high-rise buildings.

There are approval or qualification programs administered by approved agencies such as FM Approvals and Underwriters Laboratories for contractors who install materials that become firestop systems. Any contractor (trade or specialty firestop contractor) installing firestop systems can be approved or qualified to the programs administered by these agencies. The programs are similar to ISO 9000 that is used for the manufacturing environment, but adjusted for the construction environment. Successful completion means that the company has policies and procedures in place sufficient to control operations resulting in installations conforming to the listed firestop system.

Any firm is eligible to obtain FM Approval and or UL Qualification. With costs ranging from $6000 to $10000 for the initial audit and about $3000 annually for ongoing audits by UL & FM, the cost is less than many contractors would spend on advertising in the "Blue Book" or in entertainment. Experience shows that the cost can be recovered through the benefits of improved processes and reduced errors on firestopping projects.

Firestopping by a contractor firm who has been approved or qualified means that the firm has the processes in place in the company culture to handle the zero tolerance installation program needed for firestop systems for fire and life safety. The audits by FM & UL test the company's ability to install fire and life safety through penetration firestop systems to these requirements, through extensive review of the company procedures.

Below is a summary of what it takes for a contractor company to become FM 4991 Approved and / or UL Qualified:

-Designated Responsible Individual (DRI) – Each firm employs a DRI who has passed an industry exam based on the Firestop Contractors International Association's Firestop Industry Manual of Practice, FM Standard FM 4991, Standard for the Approval of Firestop Contractors, and - or the UL Qualified Firestop Contractor Program requirements, as well as selection of firestop systems from directories matched to field conditions.

-Quality Audits – FM & UL then audit the firestop processes of the company:

--Initial Audit - The process to install firestopping is very technical, and needs attention to detail.The specialty firestop contractor firm or trade contractor firm has their company quality manual audited and approved or qualified by an auditor from either FM Approvals or Underwriters Laboratories to be recognized by the approved agency as a 'certified contractor'. This is a very robust, truly independent inspection of the contractors' firestop systems selection, submittal, and installation and inspection processes by FM & UL Auditors. Auditors also visit a project site to verify that the procedures are actually in place throughout the company. Audits of the company include every discipline from training of employees, systems selection and communications to – from the field.

--Annual Audit – FM and or UL visit the firm to review the company's procedures annually to verify continued compliance to the FM 4991 Standard or UL Qualified Firestop Contractor Program These visits are key to continued success of the firm's quality management system.

Firestopping is a vital part of effective compartmentation. When installation is not performed correctly, it can cause delays of certificate of occupancy, reducing building owners' revenue streams and create a fire and life safety risk. FM Approved and UL Qualified Firestop Contractors can lower the risk of non compliant firestopping through a company culture that has embraced the quality management system approach through their company culture.

Firestopping installation is a process that is knowledge sensitive, and requires a company (not just a worker) that has the quality management systems culture ingrained in it's operations and, more importantly, it's people. Plus, the production of the quality assurance manual at the company helps them gather important insight into company operations through self assessment followed up by a full audit by a credible, independent organization, FM & UL

There are many contractor firms who have been approved or qualified, that cover most of the US, Dubai, with many more in process of becoming approved or qualified throughout the world. Since firestopping is lightweight, and knowledge travels, so too can FM Approved and UL Qualified Firestop Contractor Firms travel to serve local needs competitively, throughout North America. Contractors have even exported the process know how to the Middle East including the United Arab Emirates, and beyond. For more information, visit http://www.fcia.org to view Specialty Firestop Contractor Firms who have become FM 4991 Approved or UL Qualified, and see the approval and qualification documents to understand how the contractor company can get involved in the programs.

Cost Impact: There is no cost impact to this code change proposal. Approved or qualified firms assign the correct value to firestopping systems installed to the listed system.

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

ICCFILENAME: KOFFELL-FS9-714.1

FS87–09/10
714.4

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing self

Revise as follows:

714.4 Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an *approved* system to prevent the interior spread of fire. Such systems shall be securely installed and tested in accordance with ASTM E 2307 to provide an F rating ~~prevent the passage of flame~~ for ~~the~~ a time period at least equal to the *fire-resistance rating* of the floor assembly ~~and prevent the passage of heat and hot gases sufficient to ignite cotton waste~~. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.

Reason: This Code change provides a better clarification of the requirements for the materials. The "F" rating as determined in ASTM E 2307 evaluates the material or assembly for passage of flame and passage of heat and hot gases sufficient to ignite cotton waste.
This change just clarifies that the requirements are only for an "F" rating and a "T" rating is not required.

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

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

ICCFILENAME: BEITEL-FS2-714.4.doc

FS88–09/10
714.4

Proponent: James P. Stahl Jr., representing Specified Technologies, Inc.

Revise as follows:

714.4 Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an *approved* system to prevent the interior spread of fire. Such systems shall be securely installed and tested in accordance with ASTME 2307 to prevent the passage of flame for the time period at least equal to the *fire-resistance rating* of the floor assembly and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.

> **Exception**: Voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies where the vision glass extends down to the finished floor level shall be permitted to be sealed with an approved material to prevent the interior spread of fire. Such material shall be securely installed and cable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period at least equal to the fire-resistance rating of the floor assembly.

Reason: The purpose of the proposed change is to reinstate the allowance for testing at least some curtain wall assemblies, specifically those which incorporate full height vision glass, based on fire exposure to an ASTM E119 time-temperature curve.

Justification: The proposed language in the exception existed in the Code until the 2009 edition of the IBC. While ASTM E2307 was specifically developed to test perimeter fire barrier systems, there is a problem for certain types of assemblies in terms of being able to meet the new performance criteria. The proposed exception would permit the continued use of full height vision glass curtain wall assemblies based on compliance with the traditional ASTM E119 testing.

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

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

ICCFILENAME: STAHL-FS1-714.4

FS89–09/10
714.4

Proponent: John Valiulis, representing Hilti, Inc.

Revise as follows:

714.4 Exterior curtain wall/floor intersection. Where fire resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an *approved* system to prevent the interior spread of fire. Such systems shall be securely installed and tested in accordance with ASTME 2307 to prevent the passage of flame for the time period at least equal to the *fire-resistance rating* of the floor assembly and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.

> **Exception**: Voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies where the size of the joint between the outer edge of the floor and the nearest interior surface of the curtain wall framing exceeds 11 inches shall be permitted to be sealed with an approved material to prevent the interior spread of fire. Such material shall be securely installed and cable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period at least equal to the fire-resistance rating of the floor assembly.

Reason: The purpose of the proposed change is to reinstate the allowance for testing at least some curtain wall assemblies using the E119 fire exposure combined with specific test conditions and acceptance criteria, which were contained in previous IBC editions, for curtain walls that incorporate a joint size larger than the E2307 test currently accommodates in North American test labs.

Justification: The proposed allowance to test to E119 using specific test and acceptance conditions existed in the Code until the 2009 edition of the IBC. While ASTM E2307 was specifically developed to test perimeter fire barrier systems, the test method and equipment has some physical limitations which make it impossible to test a curtain wall that would have a joint width exceeding 11 inches, as explained below. Thus, another option is needed for assessing the fire safety of any solution proposed to seal the perimeter gap in those situations. The E119 testing option that was in IBC 2000, 2003 and 2006 can provide that needed assessment.

ASTM E 2307 currently requires that the exterior wall assembly be secured to the test apparatus at each end while completely closing the front face of the test apparatus (except for the simulated window). The floor assembly used is installed into the test apparatus and will butt up against the floor of the observation room. The floor assembly which is used as part of the perimeter fire barrier system is required to be at least 12” wide. With these parameters and current test apparatus construction, joint widths are limited to approximately 11”. The test laboratories conducting E2307 testing measure and report joint width as the distance from the outer edge of the floor slab to the inner edge of the wall framing.

Field conditions often exceed this 11” joint width, with curtain walls having joint widths up to 24” being installed in some buildings. These are applications that cannot currently be tested utilizing the test apparatus specified in ASTM E 2307. The maximum perimeter joint width currently listed with a third party testing agency is 10”. The proposed exception would permit the continued use of joint widths exceeding 11” based on compliance with the traditional ASTM E119 testing.

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

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

ICCFILENAME: VALIULIS-FS1-714.4

FS90–09/10
714.4, 714.4.1, 714.4.2 (New)

Proponent: Jesse J. Beitel, Rick Thornberry, Hughes Associates, Inc., The Code Consortium, representing Centria, Trespa North America, Inc., Alcan Composites USA, Inc.

Revise as follows:

714.4 Exterior curtain wall/floor intersection<u>s</u>. <u>The intersections of exterior curtain wall assemblies and floor or floor/ceiling assemblies shall be protected against interior fire spread in accordance with Sections 714.4.1 through 714.4.3 as applicable. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.</u>

<u>714.4.1 Fire-resistance-rated exterior curtain wall/fire-resistance-rated floor intersections.</u> Where fire resistance-rated floor or floor/ceiling assemblies are required, ~~voids created at~~ the intersection of ~~the~~ <u>fire-resistance-rated</u> exterior curtain wall assemblies and such floor assemblies shall be sealed with an approved system<u>.</u> ~~to prevent the interior spread of fire.~~ Such systems shall be securely installed and tested in accordance with ASTM E 2307 to ~~prevent the passage of flame~~ <u>provide an “F” rating and a “T” rating</u> for ~~the~~ <u>a</u> time period at least equal to the fire-

resistance rating of the floor assembly. ~~and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.~~

714.4.2 Nonfire-resistance-rated exterior curtain wall/fire-resistance-rated floor intersections. Voids created at the intersection of nonfire-resistance-rated exterior curtain wall assemblies and fire-resistance-rated floor assemblies shall be sealed with an approved system. Such systems shall be securely installed and tested in accordance with ASTM E2307 to provide an "F" rating when tested with the nonfire-resistance-rated exterior curtain wall assembly. The "F" rating shall be the greater of 30 minutes or the time at which one of the following occurs .

1. The "F" rating is determined in the ASTM E2307 test, or
2. A through-crack, hole or other opening is observed in the exterior exposed face of the curtain wall assembly at a location above the upper surface of the floor assembly during the ASTM E2307 test.

714.4.~~1~~ 3 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance-rated floor or floor/ceiling assemblies shall be sealed with an approved material or system to retard the interior spread of fire and hot gases between stories.

Reason: This code change is a revision to Section 714.4. This revision addresses several issues with respect to the existing wording and provides in some cases, new requirements. The proposed reorganization of Section of 714.4 now provides requirements based on the fire-resistance ratings of the types of wall assemblies and floors or floor/ceiling assemblies that intersect. This reorganization greatly simplifies the use of this section of the Code.

One new item is the requirement for the seal when a fire-resistance-rated wall meets a fire-resistance-rated floor or floor/ceiling assembly. In this case, the seal must exhibit an "F" rating and a "T" rating equivalent to the fire-resistance rating of the floor or floor ceiling assembly. This change is appropriate for this application and incorporates the reported results of ASTM E2307 ('F" and "T" ratings) and thus clarifies the requirements.

Another change is the addition of a section to address the intersection of a nonfire-resistance-rated wall assembly and a fire-resistance-rated floor or floor/ceiling assembly. This is a very common type of intersection when curtain walls are used. In this case, the wall assembly does not have a fire-resistance rating and when tested in the ASTM E2307, the wall may not remain intact for the fire-resistance-rating period of the floor or floor/ceiling assembly. This new section recognizes this fact but still requires ASTM E2307 testing with the nonfire-resistance-rated wall assembly and requires a minimum fire-resistance rating for the seal material. The time period of 30 minutes was selected as providing a significant but yet realistic fire performance criteria for this condition.

The current 714.4.1 which addresses the issue of nonfire-resistance-rated floors is unchanged.

This reorganization provides significant clarity to this section of the Code and provides appropriate requirements based on the fire-resistance ratings of the intersecting walls and floors or floor ceiling assemblies.

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

Analysis: Code change proposals FS90 and FS91 address fire-resistance rated curtain wall/floor intersection 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: BEITEL-FS13-714.4

FS91–09/10

702, 714.4, 714.4.1, 714.4.1.1 (New), 714.4.3 (New)

Proponent: Rick Thornberry, PE, The Code Consortium, Inc., representing Alcan Composites USA, Inc.

1. Add new text as follows:

702 DEFINITIONS

PERIMETER FIRE BARRIER. The perimeter joint protection installed between the exterior curtain wall assembly and the floor assembly to resist the passage of fire and hot gases between stories within the building at the voids created at the intersection of the exterior curtain wall assembly and the floor assembly.

2. Revise as follows:

714.4 Exterior curtain wall/floor intersection. Exterior curtain wall/floor intersections shall comply with Sections 714.4.1 and 714.4.2 as applicable.

714.4.1 Exterior curtain wall/fire-resistance rated floor assembly intersections. Where fire-resistance-rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be protected by ~~sealed with~~ an *approved* perimeter fire barrier designed to resist ~~system to prevent~~ the interior spread of fire and hot gases between stories. ~~Such systems~~ The perimeter fire barrier shall be

~~securely installed and~~ tested in accordance with ASTM E 2307 ~~to prevent the passage of flame~~ for the time period at least equal to the *fire-resistance rating* of the floor assembly ~~and prevent the passage of heat and hot gases sufficient to ignite cotton waste. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5~~.

714.4.1.1 Installation. The perimeter fire barrier shall be securely installed so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

714.4.~~1~~2 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance-rated floor or floor/ceiling assemblies shall be sealed with an *approved* material or system to retard the interior spread of fire and hot gases between *stories*.

714.4.3 Curtain wall spandrels. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.8.5.

Reason: This section was revised during the last code cycle to eliminate the alternate method of testing which was utilized prior to the development of ASTM E 2307. So now the protection of the voids created at the intersection of exterior curtain wall assemblies and floor assemblies is required to be tested in accordance with ASTM E 2307. We believe it is appropriate to further revise this section to clarify that fact. Therefore, we have deleted some of the unnecessary terminology since that is already covered within the test method itself or within the new definition for "Perimeter Fire Barrier" which we are also including as a part of this code change proposal.

The definition for "Perimeter Fire Barrier" being proposed is similar to that contained in ASTM E 2307 and is the term contained in the title of the standard which is "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus." So we have incorporated the term "Perimeter Fire Barrier" within this code change to make it very clear what protection the section prescribes based on tests conducted in accordance with ASTM E 2307. Some of the other terminology we have substituted parallels that in Section 714.1 General for fire-resistant joint systems so that they are consistent since Section 714.4 is a subsection of Section 714 Fire-Resistant Joint Systems.

We have also reformatted Section 714.4 and subdivided it into two additional subsections. Subsection 714.4.1 specifically deals with the installation of the perimeter fire barrier where the floor assembly is required to have a fire-resistance rating and utilizes terminology based on Section 714.2 Installation for fire-resistant joint systems for consistency. Subsection 714.4.3 is simply the last sentence of Section 714.4 relocated. Current Subsection 714.4.1 has been renumbered as 714.4.2 to fit into this reformatting. We believe that this will provide for better clarity, interpretation, and enforcement of these provisions for exterior curtain wall/floor intersection protection utilizing perimeter fire barriers.

In summary, no technical changes have been made to this section. It has simply been editorially revised to be consistent with the referenced test method ASTM E 2307 and similar requirements in Section 714 for fire-resistant joint systems of which this Section 714.4 is a subsection.

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

Analysis: Code change proposals FS90 and FS91 address fire-resistance rated curtain wall/floor intersection 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: THORNBERRY-FS7-714.4.1

FS92–09/10
714.7 (New)

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

Add new text as follows:

714.7 Dissimilar materials. Joints installed in or between fire-resistance-rated walls or horizontal assemblies consisting of two or more dissimilar assemblies shall be protected by an *approved fire-resistant joint system* complying with Section 714.3.

Reason: There are several instances within the IBC that provide specific guidance on the requirements governing the interaction of dissimilar materials. Specific examples are included in Sections 713, 721 and 1403. There is a need to provide specific requirements for assemblies complying with the both Sections 703 (tested) and Section 721 (calculated) fire resistance ratings.

Purpose: To clarify the application of Section 714 to joints between dissimilar fire-resistance rated wall, floor or ceiling assembly materials used adjacent to one another.

Substantiation: Joint systems are installed in joints, voids, gaps, or other discontinuities between or bounded by two or more fire-resistance rated elements. When these assemblies are tested and listed to ASTM E119 in order to obtain their fire resistance rating, the testing/listing includes the joints that would normally occur within the floor, wall or ceiling, which would bind together and provide continuity between independent units of the same building material, such as the compound and tape joints between gypsum boards, or the mortared joints between concrete masonry units. However, the joint that could occur when that floor, wall or ceiling intersects another assembly of a different material is not anticipated nor accounted for in the E119 test. Preventing fire spread through the joint between such dissimilar materials is in fact the principle reason for testing fire-resistance rated joint systems to ASTM E1996, UL 2079. This code change would help to clarify that it is these joints between dissimilar materials/assemblies that require a joint system tested for each desired combination of materials.

There are numerous systems which have been tested by nationally recognized testing organizations for these applications. Information concerning these details is described in the individual systems.

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

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

ICCFILENAME: CRIMI-FS1-714.7 NEW

FS93–09/10
715.3.1 (New)

Proponent: Lynn Warren Manley, Staff Architect State of Illinois Department of Public Health/Health Care Facilities and Programs, representing self

Add new text as follows:

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

1. Designs documented in *approved* sources.
2. Calculations performed in an *approved* manner.
3. Engineering analysis based on a comparison of opening protective designs having *fire protection ratings* as determined by the test procedures set forth in NFPA 252, NFPA 257 or UL 9.
4. Alternative protection methods as allowed by Section 104.11.

715.3.1 Testing. Opening protective shall be considered to comply with or shall be deemed equivalent to the testing requirement's of NFPA 252, NFPA 257 or U L 263 only if it has been tested without use or consideration of a fire suppression system.

Exception:

1. Opening protection used in exterior walls in accordance with 705.8.2
2. Glazlng wall systems or window openings used in atriums as permitted under 404.6

Reason: This change is necessary to clarify the conditions where **ES** Report NERS16 may not be used. NERdl6 was originally approved by the ES Committee under BOCA and was reissued by the ICC ES Committee in Reno in 2007. According to the proponents and with supporting agreement from ES staff members, this glazing system may be used as an equivalent system in any fire barrier, with almost no limitations.

The glazing system **is** tempered glass, it **can** be no higher than **13-0"** and it cannot be used for hazardous areas. However, according to ES Staff and according to the report (NER-516) there are no limitations for its use as a glazing system in any fire barriers, including but not limited to: exit enclosures, shaf4 enclosures, occupancy separations, horizontal exits, etc.

The test that this system passed was a simulated **E** 119 test that was terminated when the sprinkler system activated. No testing was conducted that simulated total or partial failure of the sprinkler system. This system did not pass **E**119, but the ES Committee accepts the test as equivalent.

NER-516 amounts to a sprinkler trade off, eliminating all of the requirements for fire ratings where a sprinkler system is provided and installed as proposed in the ES Report.

The proponent ***of*** the above change suggests that NER-516 is not a demonstration of equivalency but rather a code change that has no€ been considered or voted on by the ICC voting members.

Cost Impact: The cost impact is negligible and not relevant when compared to the loss from fire and loss of **life** if NER-516 becomes widely used without limitations.

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

ICCFILENAME: MANLEY-FS1-715.3.1 NEW

FS94–09/10
Table 715.4

Proponent: Clay Aler, PE, representing Koffel Associates

Revise Table as follows:

TABLE 715.4
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY	REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4 3 2 1 1/2	3 3a 1 1/2 1 1/2
Fire barriers having a required fire-resistance rating of 1 hour: Shaft, exit enclosure and exit passageway walls Atrium Other fire barriers	 1 1 1	 1 1/3 b 3/4
Fire partitions: Corridor walls Other fire partitions	 1 0.5 1 0.5	 1/3 b 1/3 b 3/4 1/3
Exterior walls	3 2 1	1 1/2 1 1/2 3/4
Smoke barriers	1	1/3 b

a. Two doors, each with a fire protection rating of 11/2 hours, installed on opposite sides of the same opening in a firewall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.
b. For testing requirements, see Section 715.4.3.

Reason: Atriums have additional fire protection measures in excess of typical 1 hour fire-resistive shaft enclosures (I.e approved materials, automatic sprinkler protection, minimum Class B interior finishes, and smoke control). These additional fire protection features minimize the risk *attire* and smoke spread from the atrium to the remainder of the building. Where incidental use fire barriers are required to be of 1 hour fire-resistance, the presence of sprinkler protection allows a reduction in 1he wall construction to a smoke partition per 508.2.2.1. Where occupancy separations are required to be of 2 hour fire-resistance, the presence of sprinkler protection permits a 1-hour reduction of the fire barrier construction where allowed by Table 508.3.3. Similarly, the fire protection measures required for atriums in 404 provide mitiga1ing justification for a reduction of the opening protective rating associated with an atrium enclosure.

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

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

ICCFILENAME: ALER-FS1-Table 715.4.doc

FS95–09/10
715.4.2.1 (New)

Proponent: John W. Park, John Park consulting, representing Won-Door Corporation.

Add new text as follows:

715.4.2.1 Electronic Controls for Horizontal Sliding Doors. Electronic controls for horizontal sliding doors that include closing and signaling functions shall be listed and tested in accordance with UL 864.

Reason: Self closing or automatic closing devices referenced need to work seamlessly with fire alarm systems, including providing feedback signals to achieve joint control with the fire control center. UL 864, *Standard for Control Units and Accessories for Fire Alarm Systems* is a nationally recognized standard that provides appropriate tests and guidelines to assure compatibility. It further deals with critical functions such as alarm verification, endurance, life safety networks, notification, power supplies, resets, risk of electrical shock, risk of fire, standby power sources, storage batteries, dual power source systems, supervisory signals, and trouble signals. Since the closing device essentially releases the door from its open

to closed position on receipt of a signal from the fire alarm system, they should be evaluated to the 864 standard under the "Releasing Device" category. Holding said closing devices to nationally recognized standards ensures consistency and compatibility for these types of products.

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

Analysis: Test standard UL 864 is currently referenced in the I-codes.

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

ICCFILENAME: PARK-FS1-715.4.2.1

FS96–09/10
715.4.3.1

Proponent: Bill Ziegert, representing Smoke Guard, Inc.

Revise as follows:

715.4.3.1 Smoke and draft control. *Fire door* assemblies <u>including elevator hoistway doors opening into fire-resistance rated corridors</u> shall also meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 $m_3/s \cdot m_2$) of door opening at 0.10 inch (24.9 Pa) of water for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited. Installation of smoke doors shall be in accordance with NFPA 105.

Reason: Just as it is important that room to corridor doors in fire rated corridors meet not only the fire-resistance rating requirements, but also the requirements for smoke and draft control, it is equally if not more important that the elevator hoistway doors which are fire- resistance rated meet the same smoke leakage requirements when they open into fire resistance rated corridors. Fires on one floor can potentially overcome the corridor doors, filling the corridor with smoke and then enter the elevator shaft where the stack effect would force the smoke out onto non affected floors. If the hoistway doors resist the passage of smoke, occupants on other floors would not be as likely to be exposed to the smoke hazard.

Cost Impact: Moderate cost increase that would apply only to occupancies without elevator lobbies.

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

ICCFILENAME: ZIEGERT-FS2-715.4.3.1

FS97–09/10
715.4.3.2, TABLE 715.4

Proponent: William F. O'Keeffe, representing SAFTIFirst

1. Revise as follows:

715.4.3.2 Glazing in door assemblies. <u>Where Table 715.4 identifies 1-hour rated corridor walls or 1-hour rated smoke barriers, i</u>~~i~~n a 20-minute fire door assembly, the glazing material in the door itself shall have a minimum fire-protection rating of 20 minutes and shall be exempt from the hose stream test. Glazing material in any other part of the door assembly including transom lites and sidelites, shall be tested <u>for 45-minutes</u> in accordance with NFPA ~~257~~ <u>252</u> or UL ~~9~~ <u>10C</u>, including the hose stream test~~, in accordance with Section 715.5~~.<u>Where Table 715.4 identifies 0.5-hour rated corridor walls or other fire partitions, in a 20-minute fire door assembly, the glazing material in the door vision panel, sidelights and transoms shall have a minimum fire-protection rating of 20 minutes when tested to NFPA 252 or UL 10C, and shall be exempt from the hose stream test.</u>

2. Revise as follows:

TABLE 715.4
FIRE DOOR AND FIRE SHUTTER FIRE PROTECTION RATINGS

TYPE OF ASSEMBLY	REQUIRED ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4 3 2 1 1/2	3 3[a] 1 1/2 1 1/2
Fire barriers having a required fire-resistance rating of 1 hour:		
Shaft, exit enclosure and exit passageway walls	1	1
Other fire barriers	1	3/4
Fire partitions:		
Corridor walls	1 0.5	1/3 [b] 1/3 ~~[b]~~
Other fire partitions	1 0.5	3/4 1/3
Exterior walls	3 2 1	1 1/2 1 1/2 3/4
Smoke barriers	1	1/3 [b]

a. Two doors, each with a fire protection rating of 11/2 hours, installed on opposite sides of the same opening in a firewall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.
b. For testing requirements, see Section 715.4.3.

Reason: This code change provides for testing of a 20-minute door assembly, including the sidelight and transom panels, to NFPA 252 without hose stream, when the assembly is in a half-hour rated corridor or fire partition. Since a half hour wall tested to ASTM E119 is not required to be hose stream tested, there is no fire safety reason to require the door assembly component in that wall to meet a hose stream test.

In past code cycle testimony it has been suggested that there is a reason to treat sidelights and transoms differently than the glazing in the vision panel of the door, because combustibles can be stacked next to a sidelight (of course, that argument doesn't apply to the transom, because it is above the door). It has also been suggested that 20-minute tempered products are subject to "disintegration."

The first point is not a hose stream issue, but a radiant heat issue, and applying a hose stream test to products does not assure that they will block radiant heat from passing through the glazing and spreading the fire. Indeed, as seen by the test data in the supporting fire test video, http://www.safti.com/video/resist/resistive.html, one type of fire protection material, ceramic, transmits enough radiant heat in the first 20-minutes of fire exposure to cause spontaneous combustion. Wired glass, another fire protection product that can pass the hose stream test, likewise transmits dangerous levels of radiant heat during the early stages of a fire.

The second point simply isn't true, and was not substantiated by any test data showing alleged "disintegration." Specialty tempered products have undergone rigorous fire testing, and have proven to be effective fire protection materials by fire case history. Millions of square feet of these products have been used worldwide without any reports of the alleged "disintegration" alleged by opponents to this code change. Significantly, opponents of this code change have never come forward with any reported instances of failure.
The fact is, products not tested to the hose stream protect against fire equally as well as those that are tested.

This change also changes the test standard for sidelights and transoms back to NFPA 252 and UL 10C, which is the standard historically applied to door assemblies that include sidelights and transoms, and is consistent with the test protocol specified in NFPA 80. The application of NFPA 257 under the existing provision has caused confusion and impractical test methods for testing one door assembly to two different test standards.

In 20-minute window applications in half hour walls, there is no legitimate fire safety reason for requiring one element of the fire resistive construction to pass the hose stream test, where the half hour wall assembly and 20-minute door components do not pass that same test.

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

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

ICCFILENAME: OKEEFFE-FS6-715.4.3.2

FS98–09/10
715.4.3.2, 715.4.3.2.1 (New)

Proponent: William F. O'Keeffe, representing SAFTIFirst

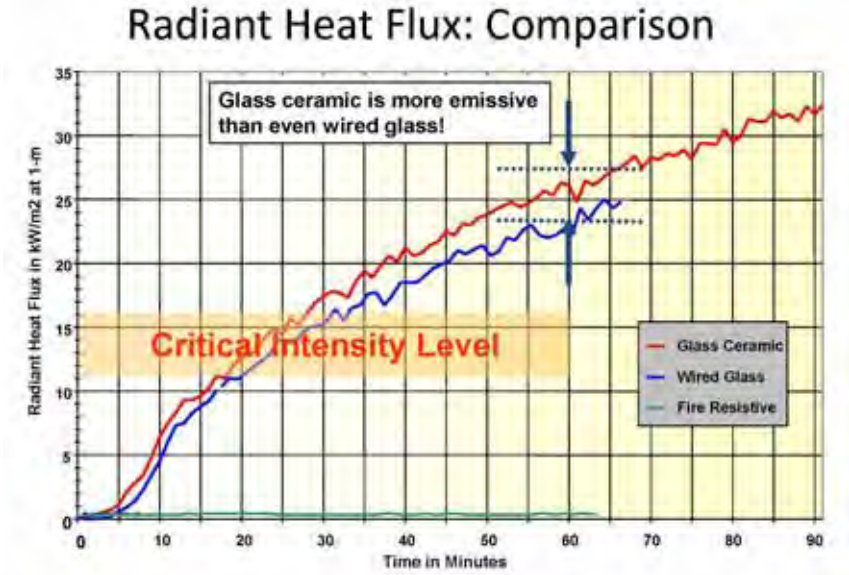
Revise as follows:

715.4.3.2 Glazing in door assemblies. In a 20-minute fire door assembly, the glazing material in the door itself shall have a minimum fire-protection rating of 20 minutes and shall be exempt from the hose stream test. Glazing material in any other part of the door assembly including transom lites and sidelites, shall be tested in accordance with NFPA 252 or UL10C ~~NFPA 257 or UL 9~~, including the hose stream test, in accordance with Section 715.5, subject to the limitations in Section 715.4.3.2.1.

715.4.3.2.1 Fire protection rated glazing in sidelites shall be limited to not more than 24"(610 mm) on either side of the door assembly measured from the edge of the door frame. Fire protection rated glazing in transoms shall be limited to not more than 24" in height and extending no more than 24" (610 mm) on either side of the fire door assembly, measured from the edge of the door frame. Fire resistance rated glazing tested as an assembly to ASTM E119 or UL 263 shall be permitted in excess of these limits where the fire resistance rating is equal to or greater than 1-hour.

Reason: Fire protection rated glazing materials do not protect against radiant heat. The unrestricted use of these materials in exit corridors in the large sizes for which they have been tested and listed threaten the life safety of building occupants attempting to exit past them in a fire.

Fire test data show that at 20 minutes of fire exposure, these materials transmit in excess of 10 kW/m^2, and at 10 minutes of fire exposure, transmit 5 kW/m^2. http://www.safti.com/video/resist/resistive.html See Cumulative Radiant Heat Data Chart, prepared by the test sponsor of the test depicted in the video, below. The Society of Fire Protection Engineers Fire Protection Engineering Handbook identifies a fairly obvious tolerance limit for exposure to radiant heat of 2.5 kW/m^2 due to unbearable pain. (See SFPE Handbook of Fire Protection Engineering, 2nd edition, page 2-114).



Also included as further support of this code change are two test reports from the Coast Guard testing of (1) Ceramic (FireLite) in steel bulkheads (Report No. CG-D-37-95), and (2) wired glass in steel bulkheads (Report No. CG-D-38-95). Temperature rise and radiant heat flux measurements were recorded. The tests were intended to measure radiant heat flux and surface temperature performance at 60 minutes.

The tests can be summarized as follows:

Wired Glass Test

The test of the wired glass panels resulted in glazing failure prior to 60-minutes, so radiant heat and temperature rise were only recorded up to the time of the wired glass failure.

Test 1
Heat flux at end of test (41:24 minutes) - 71 kW/m sq.
Surface temperature - wired glass temperature - 730 degrees C; steel frame - 540 degrees C

Test 2
Heat flux at end of test (37:46 minutes) - 48 kW/m sq.
Surface temperature - wired glass temperature - 730 degrees C; steel frame - 550 degrees C

Test 3
Heat flux at end of test (48:30 minutes) - 57 kW/m sq.
Surface temperature - wired glass temperature - 760 degrees C; steel frame - 585 degrees C

Conclusion on page 8 - As the window panes began to reach their melting point and flow out of the test frame, the recorded heat flux levels showed obvious increases. In all three tests, the recorded heat flux increased approximately 5-7 kW/m sq. until the wire glass fell out of the test frame and the test was terminated.

Ceramic (FireLite) Test
Test 1
Heat flux at end of test (60:00 minutes) - 75 kW/m sq.
Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C
Test 2
Heat flux at end of test (60:00 minutes) - 69 kW/m sq.
Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C
Test 3
Heat flux at end of test (60:00 minutes) - 73 kW/m sq.
Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C

According to these test reports, the surface temperature is significantly higher on the glazing than it is on the steel frame. Also, the report notes that the radiant heat measurements taken that included the "cooler steel frame" were several percentages lower than the view that included just the glazing. (see Ceramic test report (Report No. CG-D-37-95), page 6.)

Limitations on area uses of fire protection glazing products is long overdue. In Europe, code regulators have recognized the need for restricting use of fire protection materials based on radiant heat hazards, particularly their use in egress paths. Reasonable limits protecting life safety are achieved by limiting the area of use in sidelights in exit corridors, permitting building occupants safe egress. This code change at the same time permits use in larger sizes of products that meet fire resistance radiant heat and temperature rise limits of ASTM E119, because those products do not transmit dangerous levels of radiant heat.

As stated in NFPA 80 (200&), Annex I:

"Because the present fire test standard, NFPA 257, does not require measuring and reporting temperature rise on the unexposed face of the glazing material or radiant heat transmission, glazing products tested to this standard have not been required to retard radiant heat transfer. However, these data are required in many European fire test standards. As a result, European building codes place limitations on the use of glazing in fire-resistant partitions inside buildings and require the use of insulating glazing in means of egress as well as where combustibles could be in close proximity. Research by Margaret Law, Bsc, Ministry of Technology and Fire Offices Committee, Joint Fire Research Organization, led to the development of such limitations in British building regulations."

This change also changes the test standard for sidelights and transoms back to NFPA 252 and UL 10C, which is the standard historically applied to door assemblies that include sidelights and transoms, and is consistent with the test protocol specified in NFPA 80. The application of NFPA 257 under the existing provision has caused confusion and impractical test methods for testing one door assembly to two different test standards. The change to NFPA 252 will improve safety in that the acceptance criteria for passing the hose stream test is more stringent under NFPA 252. NFPA 252 does not allow glass loss at the end of the hose stream test, compared to NFPA 257, which allows 30% perimeter loss, and 10% loss out of the center.

Bibliography

1. Test Report, Fire Performance of Three Wired Glazed Window Assemblies, Report No. CG-D-38-95
2. Test Report, Fire Performance Evaluation of Three A-O Glazed Window Assemblies, Report No. CG-D-37-95

Cost Impact: This code change will not increase construction costs, as fire protection materials are still permitted, and the cost of fire resistance products permitted for larger area uses is now comparable to safety rated fire protection products that pass hose stream testing.

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

ICCFILENAME: OKEEFFE-FS11-715.4.3.2.1

FS99–09/10
715.4.4 (New)

Proponent: William F. O'Keeffe, representing SAFTIFirst

Revise as follows:

715.4.4 (New) 20-Minute door assemblies in other fire partitions. Fire door assemblies required to have a minimum fire protection rating of 20-minutes where located on other fire partitions required to have a fire resistance rating of 0.5 in accordance with Table 715.4 shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test. Glazing in the door vision panel, and in any other part of the door assembly, including transom lites and sidelites, shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test, and shall have a minimum fire protection rating of 20 minutes.

(Renumber subsequent sections)

Reason: Table 715.4 provides for 1/3-hour door opening protection of "other fire partitions" with a half hour wall rating. However, there is not specific provision elsewhere in Chapter 7 that spells out the requirements, as there is for doors assemblies in corridors and smoke barriers, which are addressed in 715.4.2. This provides for testing of a 20-minute door assembly to NFPA 252 without hose stream. Since a half hour wall tested to

ASTM E119 is not required to be hose stream tested, there is no fire safety reason to require the door assembly component in that wall to meet a hose stream test.

In past cycles, during testimony concerning the application of the hose stream test to glazing, it has been suggested that there is a reason to treat sidelights and transoms differently than the glazing in the vision panel of the door, because combustibles can be stacked next to a sidelight (of course, that argument doesn't apply to the transom, because it is above the door). It has also been suggested that 20-minute tempered products are subject to "disintegration."

The first point is not a hose stream issue, but a radiant heat issue, and applying a hose stream test to products does not assure that they will block radiant heat from passing through the glazing and spreading the fire. Indeed, as seen by the test data in the supporting fire test video, http://www.safti.com/video/resist/resistive.html, one type of fire protection material, ceramic, transmits enough radiant heat in the first 20-minutes of fire exposure to cause spontaneous combustion. Wired glass, another fire protection product that can pass the hose stream test, likewise transmits dangerous levels of radiant heat during the early stages of a fire.

The second point simply isn't true, and was not substantiated by any test data showing alleged "disintegration." Specialty tempered products have undergone rigorous fire testing, and have proven to be effective fire protection materials by fire case history. Millions of square feet of these products have been used worldwide without any reports of the alleged "disintegration" alleged by opponents to this code change. Significantly, past opponents of this code change have never come forward with any reported instances of failure.

The fact is, products not tested to the hose stream protect against fire equally as well as those that are tested.

In 20-minute window applications in half hour walls, there is no legitimate fire safety reason for requiring one element of the fire resistive construction to pass the hose stream test, where the half hour wall assembly and 20-minute door components do not pass that same test.

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

Analysis: Code change proposals FS99 and FS107 address hose stream testing requirements for 20 minute door assemblies in other fire partitions. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: OKeeffe-FS2-715.4.4-New

FS100–09/10
715.4.4.1

Proponent: William F. O'Keeffe, representing SAFTIFirst

Revise as follows:

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

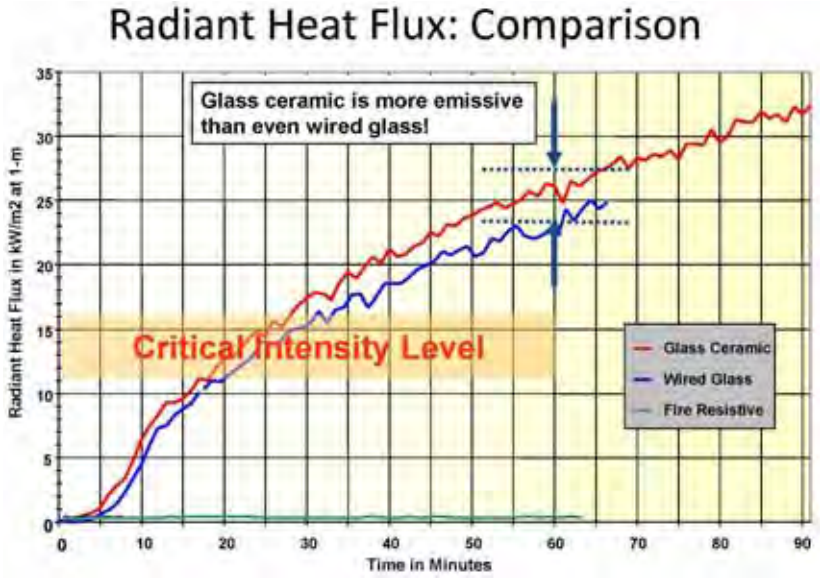
Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.1.2.

715.4.4.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 sq inches (0.065 m^2) is not permitted. Fire-resistance rated glazing in excess of 100 sq inches (0.065 m^2) shall be permitted in fire door assemblies when tested as components of the door assemblies, and not as glass lights, and shall have a maximum transmitted temperature rise of 450° F (250° C) in accordance with 715.4.4.

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

Reason: This code change will make the size limits fire protection glazing in 60-and 90-minute doors in exit enclosures and passageways consistent with size limits for 60-and 90-minute doors elsewhere in the code. The presence of sprinklers in the building does not eliminate the life safety and fire spread hazard posed by unrestricted transmission of radiant heat flux through large sizes of fire protection rated glazing panels in 60-and-90-minute doors, especially when those doors are protecting exit enclosures and exit passageways deemed essential for occupant life safety.

Fire test data show that at 45-minutes, fire protection rated products such as ceramics and wired glass transmit in excess of 20 kW/m^2. At 20 minutes of fire exposure, these materials transmit in excess of 10 kW/m^2, and at 10 minutes of fire exposure, transmit 5 kW/m^2. See http://www.safti.com/video/resist/resistive.html See Chart Cumulative Radiant Heat Energy Data Chart below, prepared by the test sponsor, Vetrotech SaintGobain. The Society of Fire Protection Engineers Fire Protection Engineering Handbook identifies a fairly obvious tolerance limit for exposure to radiant heat of 2.5 kW/m^2 due to unbearable pain. (See SFPE Handbook of Fire Protection Engineering, 2nd edition, page 2-114)



Included as further support of this code change are two test reports from the Coast Guard testing of (1) Ceramic (FireLite) in steel bulkheads and (2) wired glass in steel bulkheads. Temperature rise and radiant heat flux measurements were recorded. The tests were intended to measure radiant heat flux and surface temperature performance at 60 minutes. The tests can be summarized as follows:

Wired Glass Test

The test of the wired glass panels resulted in glazing failure prior to 60-minutes, so radiant heat and temperature rise were only recorded up to the time of the wired glass failure.

Test 1
Heat flux at end of test (41:24 minutes) - 71 kW/m sq.
Surface temperature - wired glass temperature - 730 degrees C; steel frame - 540 degrees C

Test 2
Heat flux at end of test (37:46 minutes) - 48 kW/m sq.
Surface temperature - wired glass temperature - 730 degrees C; steel frame - 550 degrees C

Test 3
Heat flux at end of test (48:30 minutes) - 57 kW/m sq.
Surface temperature - wired glass temperature - 760 degrees C; steel frame - 585 degrees C

Conclusion on page 8 - As the window panes began to reach their melting point and flow out of the test frame, the recorded heat flux levels showed obvious increases. In all three tests, the recoded heat flux increased approximately 5-7 kW/m sq. until the wire glass fell out of the test frame and the test was terminated.

Ceramic (FireLite) Test

Test 1
Heat flux at end of test (60:00 minutes) - 75 kW/m sq.
Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C

Test 2
Heat flux at end of test (60:00 minutes) - 69 kW/m sq.
Surface temperature -ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C

Test 3
Heat flux at end of test (60:00 minutes) - 73 kW/m sq.
Surface temperature -ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C

According to these test reports, the surface temperature is significantly higher on the glazing than it is on the steel frame. Also, the report notes that the radiant heat measurements taken that included the "cooler steel frame" were several percentages lower than the view that included just the glazing. (see Ceramic test report, page 6.)

As further support, the following is a published listing of the ceramic product that was tested in the weblink video provided above, which shows a maximum tested area of 3627 sq. inches.

Product Designation: Keralite FR-F, Keralite FR-R, Keralite FR-L, Keralite
Thickness: 3/16 in. or 5/16 in. (5 or 8 mm)
Glazing Compound: closed cell PVC tape for 3/4 hr and 1 hr ratings. Kerafix ceramic tape for 1-1/2 hr ratings.
Furnace Pressure: Neutral and Positive

Rating	Application	Max Exposed Area of Glass (Sq In.)	Max Width of Exposed Glass (In.)	Max Height of Exposed Glass (In.)	Min Depth of Groove (In.)	Groove Width (In.)	Building Code Marking
1 hr.	Door	3627	46-1/2	78	5/8	5/16, 7/16	D-H-NT-60
1 hr.	Window, Transom, Sidelight	3627	46-1/2	78	5/8	5/16, 7/16	D-H-NT-60, OH-60

The use of this much glazing in a fire door protecting an exit enclosure or passageway is a threat to life safety, and should not be permitted.

Finally, the current provision, which appears to allow fire protection rated glazing to exceed 100 sq. inches when the building is sprinklered, was never intended by the proponent of the code change to the 2000 IBC that allowed fire resistance rated glazing that limited temperature rise to 450 F degrees to exceed 100 sq. inches. In the Draft 2000 IBC, there was one exception in the section specifying the requirements for temperature rise doors in exit enclosures and passageways, which applied to allow a non-temperature rise door when the building is sprinklered. The proposal submitted in 1998 that amended that section to allow fire resistance rated glazing to exceed 100 sq. inches when tested to limit temperature rise to 450- degrees F did not propose a second exception that would allow fire protection glazing to exceed 100 sq. inches when the building was sprinklered. However, when the monograph was published, a duplicate exception was printed, though never intended or proposed by the proponent of that code change.

The proponent of the 1998 code change intended this section to limit fire protection rated glazing to 100 sq. inches, consistent with the size limits provided by the legacy codes, and currently applicable in Section Section 715.4.7.1—regardless of whether the building is sprinklered. The same reasons for limiting fire protection glazing in 90-minute fire doors certainly apply in 60-minute exit enclosure and passageway fire doors.

As stated in NFPA 80 (2007), Annex I:

Traditional glazing materials have been prohibited from being used in fire windows in exit stair enclosures because of the concern for radiant heat transfer. Recently, the model building codes also incorporated requirements for limiting the temperature rise on the unexposed face of fire doors opening into exit stair enclosures in order to address the problem of heat transfer (both conducted and reradiated) that could expose evacuating occupants passing doors at each landing. Therefore, caution should be exercised when considering glazing materials with fire protection ratings of 60-minutes or more in such applications, since they can transmit excessive radiant heat into the exit stair enclosure. However, glazing materials with fire resistance ratings are suitable for such situations, since they have been tested to limit radiant heat transfer.

In sum, there is good reason to clarify that fire protection rated glazing is limited to 100 sq. inches in 1-hour exit enclosures and passageways, without an exception when automatic sprinklers are installed in accordance with Chapter 9 provisions. These exit enclosures and passageways are integral to life safety, and there is no justification for not providing for passive fire protection, protecting occupants from dangerous radiant heat levels from fully glazed exit enclosure doors, especially since the cost of fire resistance rated glazing is comparable to the cost of laminated safety-rated ceramics.

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

Analysis: Code change proposals FS100 and FS107 propose similar revisions to Section 715.4.4.1. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: OKeeffe-FS1-715.4.4.1

FS101–09/10

703.5, 715.4.7.3, 715.5.9, 1703.5.4 (New)

Proponent: William F. O'Keeffe, representing SAFTIFirst

THIS IS A 2 PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THIS COMMITTEE.

PART I- IBC FIRE SAFETY

Revise as follows:

703.5 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 or UL 263 and complying with the requirements of Section 707, shall be permitted. Fire-resistance-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and the identifier "W-XXX," where the "XXX" is the fire-resistance rating in minutes. Such label or identification shall be issued by an agency and shall be permanently ~~affixed to~~ identified on the glazing.

715. 4.7.3 Labeling. Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required in Section ~~715.5.9.1~~ 715.4.7.3.1 that shall be issued by an approved agency and shall be permanently ~~affixed to~~ identified on the glazing.

715. 5.9 Labeling. Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required in Section 715.5.9.1 that shall be issued by an approved agency and shall be permanently ~~affixed to~~ identified on the glazing.

PART II- IBC STRUCTURAL

Add new text as follows:

1703.5.4 Method of labeling. Information required to be permanently identified on the product shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that, once applied, cannot be removed without being destroyed.

Reason: This code change provides for a method of permanently identifying information required by the code on the label. The language for permanent identification is taken from Section 2403.1, which applies to the permanent identification of information on glazing required by Chapter 24. This clarifies that the same method of permanent identification applies to other labeling required in the code, and specifically, Chapter 7.

This change also makes an editorial correction to Section 715.4.7.3 by correcting the reference to 715.4.7.3.1, instead of the incorrect reference to 715.5.9.1.

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

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

ICCFILENAME: OKeeffe-FS5-703.5

FS102–09/10
715.5

Proponent: William F. O'Keeffe, representing SAFTIFirst

Revise as follows:

715.5 Fire-protection-rated glazing. Glazing in fire window assemblies shall be fire-protection rated in accordance with this section and Table 715.5. Glazing in fire door assemblies shall comply with Section 715.4.7. Fire-protection-rated glazing in fire window assemblies shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 or UL 9. Fire-protection-rated glazing shall also comply with NFPA 80. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 705.3, 705.8, 705.8.5 or 705.8.6 shall have a fire protection rating of not less than 3/4 hour.

Exceptions:

1. Wired glass in accordance with Section 715.5.4
2. Fire-protection-rated glazing in 0.5-hour fire-resistance-rated partitions is permitted to have an 0.33-hour fire-protection rating.

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

715.5.8.1 Where 3/4–hour fire protection window assemblies permitted. Fire-protection-rated glazing requiring 45-minute opening protection in accordance with Table 715.5 shall be limited to fire partitions designed in accordance with Section 709 and fire barriers utilized in the applications set forth in Sections 707.3.6 and 707.3.8 where the fire-resistance rating does not exceed 1 hour.

715.5.8.2 Area limitations. The total area of fire-protection rated window~~s~~ assemblies shall not exceed 25 percent of the area of a common wall with any room.

Reason: This code change is a clarification that fire protection-rated window assemblies are subject to area limits. Since there are some window assemblies that are fire resistance rated to ASTM E119, this code change aids the user in clarifying that fire protection rated window assemblies are subject to these limits.

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

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

ICCFILENAME: OKeeffe-FS10-715.5-2

FS103–09/10
715.5, TABLE 715.5.4

Proponent: William F. O'Keefe, representing SAFTIFirst

1. Revise as follows:

715.5 Fire-protection-rated glazing. Glazing in *fire window assemblies* shall be fire-protection rated in accordance with this section and Table 715.5. Glazing in *fire door* assemblies shall comply with Section 715.4.7. Fire-protection-rated glazing shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 or UL 9. Fire-protection-rated glazing shall also comply with NFPA 80. Openings in nonfire-resistance-rated *exterior wall* assemblies that require protection in accordance with Section 705.3, 705.8, 705.8.5 or 705.8.6 shall have a fire-protection rating of not less than ¾ hour. Fire protection-rated glazing in 0.5-hour fire-resistance-rated partitions is permitted to have an 0.33-hour fire-protection rating.

~~**Exceptions:**~~

1. ~~Wired glass in accordance with Section 715.5.4.~~
2. ~~Fire protection-rated glazing in 0.5-hour fire-resistance-rated partitions is permitted to have an 0.33-hour fire-protection rating.~~

~~**715.5.4 Wired glass.** Steel window frame assemblies of 0.125-inch (3.2 mm) minimum solid section or of not less than nominal 0.048-inch-thick (1.2 mm) formed sheet steel members fabricated by pressing, mitering, riveting, interlocking or welding and having provision for glazing with 1/4-inch (6.4 mm) wired glass where securely installed in the building construction and glazed with 1/4-inch (6.4 mm) labeled wired glass shall be deemed to meet the requirements for a 3/4-hour *fire window assembly*.Wired glass panels shall conform to the size limitations set forth in Table 715.5.4.~~

715.5.4 ~~715.5.5~~ Nonwired glass. Glazing ~~other than wired glass~~ in *fire window assemblies* shall be fire-protection-rated glazing installed in accordance with and complying with the size limitations set forth in NFPA 80.

(Renumber subsequent sections)

2. Delete without substitution.

~~Table 715.5.4~~
~~**Limiting Sizes of Wired Glass Panels**~~

~~**Opening Fire Protection Rating**~~	~~**Maximum Area (square inches)**~~	~~**Maximum Height (Inches)**~~	~~**Maximum Width (Inches)**~~
~~3 hours~~	~~0~~	~~0~~	~~0~~
~~1-1/2 hour doors in exterior walls~~	~~0~~	~~0~~	~~0~~
~~1 and 1-1/2 hours~~	~~100~~	~~33~~	~~10~~
~~3/4 hour~~	~~1,296~~	~~54~~	~~54~~
~~20 minutes~~	~~Not limited~~	~~Not limited~~	~~Not limited~~
~~Fire window Assemblies~~	~~1,296~~	~~54~~	~~54~~

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

Reason: This code change deletes the exception for wired glass from complying with NFPA 257 test standards, and removes the Table as unnecessary to distinguish wired glass from other fire rated glazing products. NFPA 80, the underlying standard for fire doors and other opening protectives, has been revised to eliminate any special reference to wired glass, and wired glass is treated as any other fire rated glazing product.

The special prescriptive regulation of wired glass in steel frames is unnecessary if wired glass is tested to and listed as a fire rated window assembly. If wired glass in a steel frame cannot meet the performance criteria of NFPA 257, it should not be permitted in applications requiring fire rated protection.

Traditional wired glass is no longer allowed in fire doors because it does not meet CPSC safety glazing requirements located in Section 2406.1 of the IBC. Section 715.4.7.1 was revised last code cycle to delete reference to wired glass fire door size limits and the reference to Table 715.5.4. Accordingly Table 715.5.4 is confusing because it purports to prescribe permitted size limits for wired glass in doors which are no longer allowed in any size. The only valid application for wired glass is in fire assemblies in non-hazardous locations, and a table is not needed to prescribe those size limits.

Further, the Table is confusing to code users because there are now laminated and filmed safety wired glass products that have been tested to larger sizes, and are listed just as any other fire rated glazing product, to the maximum size tested, with dimensions as published in their individual listings.

Elimination of these special provisions also eliminates a product that would not comply with the marking and labeling requirements that have formed the basis of some confusion on the part of manufacturers and code officials and which a CTC task group worked hard to comprehensively address in between the last code change cycle and this one.

This code change also makes an editorial revision in stating the requirements for 1/3-hour rated fire windows in half hour walls as an affirmative requirement rather than as an exception.

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

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

ICCFILENAME: OKEEFFE-FS4-715.5

FS104–09/10
Table 715.5

Proponent: William F. O'Keeffe, representing SAFTIFirst

1. Revise as follows:

TABLE 715.5
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

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

NP – Not Permitted
a. Not permitted except fire resistance rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 715.2.

Reason: The purpose of this proposed change is to eliminate an anomaly in the table. Fire walls and Party walls do not permit a fire window assembly unless, (in the case of the fire wall), the window assembly is tested in accordance with ASTM E-119 or UL 263. The purpose of the fire wall or party wall is to prevent the spread of fire to the next building for a specified amount of time.

An exterior wall also is expected to prevent the spread of fire to the next exposure (building or structure) and may have a required fire resistance rating of 3 hours depending on the separation distance, occupancy group and/or type of construction. Being that the purpose of the level of fire resistance rating is the same, preventing the transmittal of fire from one building to another, the fire window assembly rating requirements should be the same. An additional consideration is why would a 1.5 hour rated window assembly be permitted in a 3 hour exterior wall when Table 715.4 would require a fire door or shutter to have a 3 hour rating in a 3 hour rated wall.

The proposal is also supported when comparing the "Exterior wall" category to the "Fire barriers" category.

The language added to Note a is editorial in that Section 715.2 only deals with fire-resistance rated glazing..

Cost Impact: Due to the wide availability of glazing meeting the requirements of Section 715.2 this proposal will not increase the cost of construction.

Analysis: Test standards ASTM E119 and UL 263 are currently referenced in the I-codes.

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

ICCFILENAME: OKeeffe-FS9-T715.5

FS104–09/10
Table 715.5

Proponent: William F. O'Keeffe, representing SAFTIFirst

1. Revise as follows:

TABLE 715.5
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF WALL ASSEMBLY		REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)
Interior walls:	Fire walls	All	NPa
	Fire barriers	> 1 1	NPa $^3/_4$
	Smoke barriers	1	$^3/_4$
	Fire partitions	1 $^1/_2$	$^3/_4$ $^1/_3$
Exterior walls		> 1 1	~~1 $^1/_2$~~ NP[a] $^3/_4$
Party wall		All	NP

NP – Not Permitted
a. Not permitted except fire resistance rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 715.2.

Reason: The purpose of this proposed change is to eliminate an anomaly in the table. Fire walls and Party walls do not permit a fire window assembly unless, (in the case of the fire wall), the window assembly is tested in accordance with ASTM E-119 or UL 263. The purpose of the fire wall or party wall is to prevent the spread of fire to the next building for a specified amount of time.

An exterior wall also is expected to prevent the spread of fire to the next exposure (building or structure) and may have a required fire resistance rating of 3 hours depending on the separation distance, occupancy group and/or type of construction. Being that the purpose of the level of fire resistance rating is the same, preventing the transmittal of fire from one building to another, the fire window assembly rating requirements should be the same. An additional consideration is why would a 1.5 hour rated window assembly be permitted in a 3 hour exterior wall when Table 715.4 would require a fire door or shutter to have a 3 hour rating in a 3 hour rated wall.

The proposal is also supported when comparing the "Exterior wall" category to the "Fire barriers" category.

The language added to Note a is editorial in that Section 715.2 only deals with fire-resistance rated glazing..

Cost Impact: Due to the wide availability of glazing meeting the requirements of Section 715.2 this proposal will not increase the cost of construction.

Analysis: Test standards ASTM E119 and UL 263 are currently referenced in the I-codes.

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

ICCFILENAME: OKeeffe-FS9-T715.5

FS105–09/10
715.5.8

Proponent: William F. O'Keeffe, representing SAFTIFirst

1. Revise as follows:

715.5.8.1 Where 3/4–hour fire protection window assemblies permitted. Fire-protection-rated glazing requiring 45-minute opening protection in accordance with Table 715.5 shall be limited to fire partitions designed in accordance with Section 709 and fire barriers utilized in the applications set forth in Sections 707.3.6 and 707.3.8 where the fire-resistance rating does not exceed 1 hour, and shall be subject to Section 715.5.8.3.

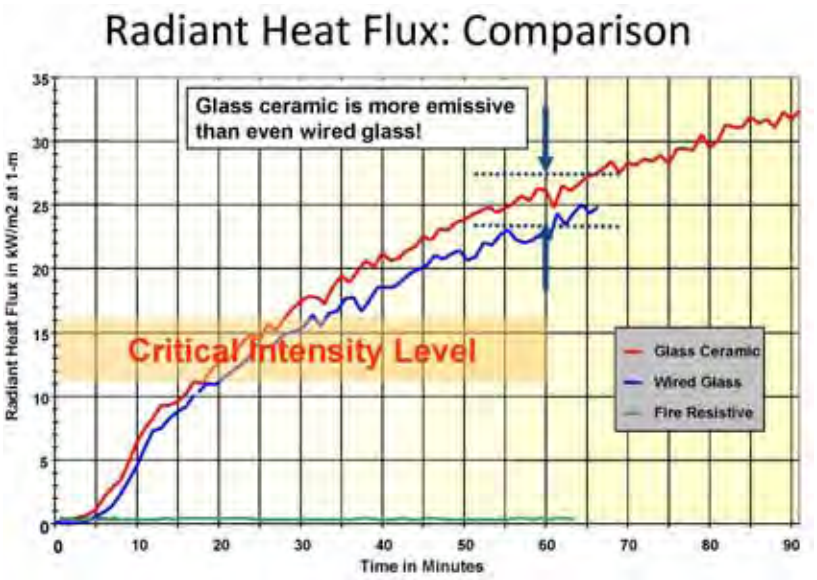
715.5.8.2 Area limitations. The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

2. Add new text as follows:

715.5.8.3 Interior fire windows in fire barriers, corridors and smoke barriers. Fire protection-rated glazing in fire windows tested to NFPA 257 used in fire barriers, corridors and smoke barriers requiring a 1-hour fire resistance rating shall be limited to applications where the bottom edge of the window frame is a minimum of 36-inches above the finished floor surface. The bottom edge height of fire resistance rated glazing tested as an assembly to ASTM E119 or UL 263 and rated a minimum of 1-hour shall not be limited.

Reason: Fire protection rated glazing materials do not protect against radiant heat. The unrestricted use of these materials in exit corridors in the large sizes for which they have been tested and listed threaten the life safety of building occupants attempting to exit past them in a fire. Their unrestricted use in other fire barriers and partitions where combustibles may be stored next to them also contribute to fire spread. By restricting the use of these materials to above 36" from the floor, occupants can crawl underneath fire windows, and combustibles piled on the floor are not as likely to pose a threat to windows installed at this height.

Fire test data show that at 45-minutes, these products transmit in excess of 20 kW/m^2, at 20 minutes of fire exposure, these materials transmit in excess of 10 kW/m^2, and at 10 minutes of fire exposure, transmit 5 kW/m^2. http://www.safti.com/video/resist/resistive.html See below, Chart Cumulative Radiant Heat Energy Data Chart, prepared by the test sponsor of the test cited above. The Society of Fire Protection Engineers Fire Protection Engineering Handbook identifies a fairly obvious tolerance limit for exposure to radiant heat of 2.5 kW/m^2 due to unbearable pain. (See SFPE Handbook of Fire Protection Engineering, 2nd edition, page 2-114).



Also included as further support of this code change are two test reports from the Coast Guard testing of (1) Ceramic (FireLite) in steel bulkheads (Report No. CG-D-37-95), and (2) wired glass in steel bulkheads (Report No. CG-D-38-95). Temperature rise and radiant heat flux measurements were recorded. The tests were intended to measure radiant heat flux and surface temperature performance at 60 minutes.

The tests can be summarized as follows:

Wired Glass Test

The test of the wired glass panels resulted in glazing failure prior to 60-minutes, so radiant heat and temperature rise were only recorded up to the time of the wired glass failure.

Test 1
Heat flux at end of test (41:24 minutes) - 71 kW/m sq.
Surface temperature - wired glass temperature - 730 degrees C; steel frame - 540 degrees C
Test 2
Heat flux at end of test (37:46 minutes) - 48 kW/m sq.
Surface temperature - wired glass temperature - 730 degrees C; steel frame - 550 degrees C
Test 3
Heat flux at end of test (48:30 minutes) - 57 kW/m sq.
Surface temperature - wired glass temperature - 760 degrees C; steel frame - 585 degrees C

Conclusion on page 8 - As the window panes began to reach their melting point and flow out of the test frame, the recorded heat flux levels showed obvious increases. In all three tests, the recorded heat flux increased approximately 5-7 kW/m sq. until the wire glass fell out of the test frame and the test was terminated.

Ceramic (FireLite) Test

Test 1
Heat flux at end of test (60:00 minutes) - 75 kW/m sq.
Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C
Test 2
Heat flux at end of test (60:00 minutes) - 69 kW/m sq.
Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C
Test 3
Heat flux at end of test (60:00 minutes) - 73 kW/m sq.

Surface temperature - ceramic glass temperature - 800 degrees C; steel frame - 600 degrees C

According to these test reports, the surface temperature is significantly higher on the glazing than it is on the steel frame. Also, the report notes that the radiant heat measurements taken that included the "cooler steel frame" were several percentages lower than the view that included just the glazing. (see Ceramic test report (Report No. CG-D-37-95), page 6.)

Limitations on area uses of fire protection-rated glazing products is long overdue. In Europe, code regulators have recognized the need for restricting use of fire protection-rated glazing materials based on radiant heat hazards, particularly their use in egress paths. Reasonable limits protecting life safety are achieved by limiting the height of windows in exit corridors, permitting building occupants safe egress. The restriction on use in other fire barriers and fire partitions reduces the possibility of fire spread due to auto-ignition, which test data show can occur well before the 45-minute fire exposure to which fire protection-rated glazing products have been tested.

As stated in NFPA 80 (2007), Annex I:

"Because the present fire test standard, NFPA 257, does not require measuring and reporting temperature rise on the unexposed face of the glazing material or radiant heat transmission, glazing products tested to this standard have not been required to retard radiant heat transfer. However, these data are required in many European fire test standards. As a result, European building codes place limitations on the use of glazing in fire-resistant partitions inside buildings and require the use of insulating glazing in means of egress as well as where combustibles could be in close proximity. Research by Margaret Law, Bsc, Ministry of Technology and Fire Offices Committee, Joint Fire Research Organization, led to the development of such limitations in British building regulations.

This code change at the same time permits use in larger sizes of products that meet fire resistance radiant heat and temperature rise limits of ASTM E119, as those products do not transmit dangerous levels of radiant heat.

Bibliography

1. Test Report, Fire Performance of Three Wired Glazed Window Assemblies, Report No. CG-D-38-95
2. Test Report, Fire Performance Evaluation of Three A-O Glazed Window Assemblies, Report No. CG-D-37-95

Cost Impact: This code change will not increase construction costs, as fire protection-rated glazing materials are still permitted, and the cost of fire resistance products permitted for larger applications and next to the floor is now comparable to safety rated fire protection products that pass hose stream testing.

Analysis: Standard NFPA 257 is currently referenced in the I-codes.

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

ICCFILENAME: OKEEFFE-FS8-715.5.8.1

FS106–09/10
715.5.8.2, Table 715.5

Proponent: William F. O'Keeffe, representing SAFTIFirst

1. Add new text as follows.

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

(Renumber subsequent section)

2. Revise as follows.

TABLE 715.5
FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

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

NP = Not Permitted.

a. Not permitted except as specified in Section 715.2.
b. For testing requirements, see Section 715.5.8.2

Reason: New section 715.5.8.2 addresses 20-minute windows now specified in Table 715.5 for ½-hour fire partitions. Since the fire partition assembly tested to ASTM E119 for a ½-hour fire resistance rating is not subject to the hose stream test, and fire doors tested for 20-minutes as required in Table 715.4 are not subject to the hose stream test, for consistency in the code, the fire window component of a ½-hour fire partition should be likewise exempt from the hose stream test.

The Fire Safety Committee approved this proposal last code cycle, stating as a reason:

Committee Reason: Based on the fact that ASTM E119 does not require the hose stream test for partitions qualifying for a 30 minute fire rating and Section 715.4.3 allows 20 minute rated fire doors to be tested without the hose stream test, the committee agreed that the hose stream test was not required for a 20 minute rated fire protection window.

A public comment was submitted, and the Committee's decision was overturned. The Commenter submitted two reasons for overturning the code changes: One, that 20-minute windows are subject to fuel loads, and two, that 20-minute tempered products are subject to "disintegration."

The first point is not a hose stream issue, but a radiant heat issue, and applying a hose stream test to products does not assure that they will block radiant heat from passing through the glazing and spreading the fire. Indeed, as seen by the test data in the supporting fire test video, http://www.safti.com/video/resist/resistive.html, one type of fire protection material, ceramic, transmits enough radiant heat in the first 20-minutes of fire exposure to cause spontaneous combustion. Wired glass, another fire protection product that can pass the hose stream test, likewise transmits dangerous levels of radiant heat during the early stages of a fire.

The second point simply isn't true, and was not substantiated by any test data showing alleged "disintegration." Specialty tempered products have undergone rigorous fire testing, and have proven to be effective fire protection materials by fire case history. Millions of square feet of these products have been used worldwide without any reports of the alleged "disintegration" alleged by opponents to this code change. Significantly, opponents of this code change have never come forward with any reported instances of failure.

The fact is, products not tested to the hose stream protect against fire equally as well as those that are tested.

In 20-minute window applications in half hour walls, there is no legitimate fire safety reason for requiring one element of the fire resistive construction to pass the hose stream test, where the half hour wall assembly and 20-minute door components do not pass that same test.

Cost Impact: This will reduce the cost of construction.

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

ICCFILENAME: OKEEFFE-FS7-715.5.8.2

FS107–09/10

702, 703.5, 715.2, 715.3, 715.3.1, Table 715.3 (New), 715.4, 715.4.1, 715.4.2, 715.4.3, 715.4.3.1, 715.4.3.2, 715.5.4, 715.4.4, 715.4.4.1, 715.4.5, 715.4.6, 715.4.6.1, 715.4.6.1.1, 715.4.7, 715.4.7.1, 715.5.8.1.1, 715.5.8.1.2, 715.5.8.1.2.1, 715.5.8.1.2.2, 715.4.7.2, 715.4.7.3, 715.5, 715.4.7.3.1, 715.4.7.4, 715.5.8, 715.5.8.1, 715.5.8.2, 715.6.8.3, Table 715.5, 715.5.9, 715.5.9.1, TABLE 715.4,

Proponent: Paul K. Heilstedt, PE, FAIA, Chair, representing ICC Code Technology Committee (CTC); William F. O'Keeffe, representing SAFTIFirst

1. Add new text:

SECTION 702 DEFINITIONS

Fire-rated glazing. Glazing with either a fire protection rating or a fire resistance rating.

2. Revise as follows:

SECTION 703 FIRE RESISTANCE RATINGS AND FIRE TESTS

703.5 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E 119 or UL 263 and complying with the requirements of Section 707, shall be permitted. Fire-resistance-rated glazing shall bear a label ~~or other identification showing the name of the manufacturer, the test standard and the identifier "W-XXX," where the "XXX" is the fire-resistance rating in minutes. Such label or identification shall be~~ marked in accordance with Table 715.3 issued by an approved agency and shall be permanently affixed to the glazing.

SECTION 715 OPENING PROTECTIVES

715.1 General. (*No change to current text)*

715.2 Fire-resistance-rated glazing. Fire-resistance-rated glazing tested as part of a fire-resistance-rated wall assembly in accordance with ASTM E 119 or UL 263 and labeled in accordance with Section 703.5, shall be permitted

in fire doors and fire window assemblies where tested and installed in accordance with their listings and shall not otherwise be required to comply with this section.

3. Add new text as follows:

715.3 Marking Fire-Rated Glazing Assemblies Fire-rated glazing assemblies shall be marked in accordance with Tables 715.3, 715.5, and 715.6.

715.3.1 Fire-rated glazing that exceeds the code requirements. Fire-rated glazing assemblies marked as complying with hose stream requirements (H) shall be permitted in applications that do not require compliance with hose stream requirements. Fire-rated glazing assemblies marked as complying with temperature rise requirements (T) shall be permitted in applications that do not require compliance with temperature rise requirements. Fire-rated glazing assemblies marked with ratings (XXX) that exceed the ratings required by this code shall be permitted.

Table 715.3
Marking Fire-Rated Glazing Assemblies

Fire Test Standard	Marking	Definition of Marking
ASTM E119 or UL 263	W	Meets wall assembly criteria.
NFPA 257 or UL 9	OH	Meets fire window assembly criteria including the hose stream test.
NFPA 252 or UL 10B or UL 10C	D H T	Meets fire door assembly criteria. Meets fire door assembly "Hose Stream" test. Meets to 450º F temperature rise criteria for 30 minutes
	XXX	The time in minutes of the fire resistance or fire protection rating of the glazing assembly

~~**715.3**~~ **715.4 Alternate methods for determining fire-protection.** *(No change to current text)*

~~**715.4**~~ **715.5 Fire door and shutter assemblies.** *(No change to current text)*

Exceptions:

(Exceptions to remain unchanged)

~~**715.4.1**~~ **715.5.1 Side hinged or pivoted swinging doors.** *(No change to current text)*

~~**715.4.2**~~ **715.5.2 Other types of assemblies.** *(No change to current text)*

~~**715.4.3**~~ **715.5.3 Door assemblies in corridors and smoke barriers.** Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in corridor walls or smoke barrier walls having a fire-resistance rating in accordance with Table ~~715.4~~ 715.5 shall be tested in accordance with NFPA 252, UL 10B or UL 10C without the hose stream test.

Exceptions:

(Exceptions to remain unchanged)

~~**715.4.3.1**~~ **715.5.3.1 Smoke and draft control.** *(No change to current text)*

~~**715.4.3.2**~~ **715.5.3.2 Glazing in door assemblies.** In a 20-minute fire door assembly, the glazing material in the door itself shall have a minimum fire-protection rating of 20-minutes and shall be exempt from the hose stream test. Glazing material in any other part of the door assembly, including transom lites and sidelites, shall be tested in accordance with NFPA 257 or UL 9, including hose stream test, in accordance with Section 715.5.

715.5.4 Door assemblies in other fire partitions. Fire door assemblies required to have a minimum fire-protection rating of 20-minutes where located in other fire partitions having a fire resistance rating of 0.5-hour in accordance with Table 715.4 shall be tested in accordance with NFPA 252, UL 10B or UL 10C with the hose stream test.

(Renumber subsequent sections)

~~715.4.4~~ **715.5.5 Doors in exit enclosures and exit passageways.** Fire door assemblies in exit enclosures and exit passageways shall have a maximum transmitted temperature ~~end point~~ rise of not more than 450F degrees (250C degrees) above ambient at the end of 30 minutes of standard fire test exposure.

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

~~715.4.4.1~~ **715.5.5.1 Glazing in doors.** Fire protection rated glazing shall be limited to 100-sq. inches (0.065 m^2). ~~Fire protection-rated glazing in excess of 100 sq.inches (0.065 m^2) shall be permitted in fire door assemblies when~~ unless the glazing has been tested as components of the door assemblies and not as glass lights, and ~~shall have~~ has a maximum transmitted temperature rise of 450F degrees (250C degrees) in accordance with Section ~~715.4.4~~ 715.5.5.

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

~~715.4.5~~ **715.5.6 Fire door frames with transom lights and sidelights.** Door frames with transom lights, sidelights, or both shall be permitted where a ¾-hour fire protection rating or less is required in accordance with Table 715.4. ~~Where a fire protection rating exceeding ¾ hour is required in accordance with Table 715.4,~~ Fire door frames with transom lights, sidelights, or both, ~~shall be permitted where~~ installed with fire-resistance rated glazing tested as an assembly in accordance with ASTM E119 or UL 263 shall be permitted where a fire-protection rating exceeding ¾-hour is required in accordance with Table 715.4.

~~715.4.6~~ **715.5.7 Labeled protective assemblies.** *(No change to current text)*

~~715.4.6.1~~ **715.5.7.1 Fire door labeling requirements.** Fire doors shall be labeled showing the name of the manufacturer or other identification readily traceable back to the manufacturer, the name or trademark of the third-party inspection agency, the fire protection rating and, where required for fire doors in exit enclosures and exit passageways by Section ~~715.4.4~~ 715.5.5, the maximum transmitted temperature point. Smoke and draft control doors complying with UL 1784 and shall be labeled as such and shall also comply with Section ~~715.4.6.3~~ 715.5.7.3. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.

~~715.4.6.1.1~~ **715.5.7.1.1 Light kits, louvers and components.** Listed light kits and louvers and their required preparations shall be considered as part of the labeled door where such installations are done under the listing program of the third-party agency. Where tested for such use, fire doors and door assemblies shall be permitted to consist of components, including glazing, vision light kits and hardware that are labeled, listed or classified by different third party agencies.

~~715.4.6.2~~ **715.5.7.2 Oversized doors.** *(No change to current text)*

~~715.4.6.3~~ **715.5.7.3 Smoke and draft control door labeling requirements.** *(No change to current text)*

~~715.4.7~~ **715.5.8 Glazing material.** *(No change to current text)*

~~715.4.7.1~~ **715.5.8.1 Size limitations.** Fire-protection-rated glazing ~~used in fire doors~~ shall comply with the size limitations of NFPA 80, and as provided in sections 715.5.8.1.1 and 715.8.1.2.

~~**Exceptions:**~~

715.5.8.1.1 Fire-resistance-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1-hour. Fire-resistance-rated glazing tested to ASTM E119 or UL 263 and NFPA 252, UL10B or UL 10C shall be permitted in fire door assemblies located in fire walls and in fire barriers in accordance with Table 715.4 to the maximum size tested and in accordance with their listings.

715.5.8.1.2 Fire-protection-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1-hour. Fire-protection-rated glazing shall be prohibited in fire walls and fire barriers except as provided in 715.5.8.1.2.1 and 715.5.8.1.2.2

715.5.8.1.2.1 Horizontal exits. ~~1. Fire protection rated glaing in fire doors located in fire walls shall be prohibited except where serving a fire door in a horizontal exit, a self closing swinging door shall be permitted to have a vision panel of not more than 100 square inches without a dimension exceeding 10 inches.~~ Fire-protection-rated glazing shall be permitted as vision panels in self-closing swinging fire door assemblies serving as horizontal exits in fire walls where limited to 100 square inches with no dimension exceeding 10 inches.

715.5.8.1.2.2 Fire barriers. ~~2.~~ Fire-protection-rated glazing ~~shall not be installed in fire doors~~ shall be permitted in fire doors having a 1-1/2-hour fire protection rating intended for installation in fire barriers, where limited to 100 square inches. ~~unless the glazing is not more than 100 square inches in area.~~

~~715.4.7.2~~ 715.5.8.2 Exit and elevator protectives. *(No change to current text)*

~~715.4.7.3~~ 715.5.8.3 Labeling. *(No change to current text)*

~~715.4.7.3.1~~ 715.5.8.3.1 Identification. *(No change to current text)*

~~715.4.7.4~~ 715.5.8.4 Safety glazing. *(No change to current text)*

(Renumber subsequent sections)

~~715.5.8~~ 715.6.8 Interior fire window assemblies. Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1-hour in accordance with this section.

~~715.5.8.1~~ 715.6.8.1 Where ¾-hour fire-protection window assemblies permitted. Fire-protection-rated glazing requiring 45 minute opening protection in accordance with Table ~~715.5~~ 715.6 shall be limited to fire partitions designed in accordance with Section 709 and fire barriers utilized in the applications set forth in Sections 707.3.6 and 707.3.8 where the fire resistance rating does not exceed 1 hour. Fire-resistance-rated glazing assemblies tested in accordance with ASTM E119 or UL 263 shall not be subject to the limitations of this section.

~~715.5.8.2~~ 715.6.8.2 Area limitations. The total area of windows shall not exceed 25 percent of the area of a common wall with any room.

715.6.8.3. Where 1/3- hour fire-protection window assemblies permitted. Fire-protection-rated glazing shall be permitted in window assemblies tested to NFPA 257 or UL 9 in smoke barriers and fire partitions requiring 1/3-hour opening protection in accordance with Table 715.6

TABLE ~~715.5~~ 715.6
FIRE WINDOW ASSEMBLY FIRE-PROTECTION RATINGS

TYPE OF WALL ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)	FIRE RATED GLAZING MARKING
Interior walls			
Fire walls	All	NP[a]	W-xxx[b]
Fire barriers	>1	NP[a]	W-xxx[b]
	1	NP[a]	W-xxx[b]
Incidental use areas (707.3.6), Mixed occupancy separations(707.3.8)	1	¾	OH-45 or W-60
Fire partitions	1	¾	OH-45 or W-60
	0.5	1/3	OH-20 or W-30
Smoke barriers	1	¾	OH-45 or W-60
Exterior walls	>1	1-1/2	OH-90 or W-XXX [B]
	1	¾	OH-45 or W-60
	0.5	1/3	OH-20 or W-30
Party wall	All	NP	Not Applicable

NP – Not Permitted

a. Not permitted except fire resistance rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 715.2

b. xxx = The fire rating duration period in minutes, which shall be equal to the fire resistance rating required for the wall assembly.

~~715.5.9~~ 715.6.9 Labeling. Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required ~~Section 715.5.9.1~~ Table 715.6 that shall be issued by an approved agency and shall be permanently affixed to the glazing.

~~**715.5.9.1 Identification.** For fire protection-rated glazing, the label shall bear the following two-part identifiers: "OH – XXX." "OH" shall indicate that the glazing has been tested to and meets both the fire protection and the hose-stream requirements of NFPA 257 or UL 9. "XXX" shall indicate the fire-protection rating period, in minutes, that was tested.~~

TABLE ~~715.4~~ 715.5
~~FIRE DOOR AND FIRE SHUTTER PROTECTION RATINGS~~
OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL[e]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire resistance rating greater than 1 hour	4	3	Not Permitted	Not Permitted	Not permitted	4	Not Permitted	W-240
	3	3[a]	Not Permitted	Not Permitted	Not Permitted	3	Not Permitted	W-180
	2	1-1/2	100 sq. in.[c]	<=100 sq.in. = D-H--90 >100 sq.in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	1-1/2	1-1/2	100 sq. in.[c]	<=100 sq.in. = D-H- 90 >100 sq.in.= D-H-W-90	Not Permitted	1-1/2	Not Permitted	W-90
Shaft, exit enclosures and exit passageway walls	2	1-1/2	100 sq. in.[c, d]	<=100 sq.in. = D-H-90 <=100 sq.in.= D-H- T-or D-H-T-W-90	Not Permitted	2	Not Permitted	W-120

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL[e]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL	
Fire barriers having a required fire-resistance rating of 1 hour: Shaft, exit enclosure and exit passageway walls	1	1	100 sq. in.[c, d]	<=100 sq.in. = D-H-60 >100 sq.in.= D-H- T-60 or D-H-T-W-60	Fire protection Not Permitted	Fire resistance 1	Fire protection Not Permitted	Fire resistance W-60
Other fire barriers	1	3/4	Maximum size tested	D-H-NT-45	Fire protection ¾		D-H-NT-45	
	1	1/3[b]	Maximum size tested	D- 20	3/4[b]		D-H-OH-45	
Fire partitions:: Corridor walls	0.5	1/3[b]	Maximum size tested	D-20	1/3		D-H- OH-20	
Other fire partitions	1	¾	Maximum size tested	D-H-45	¾		D-H-45	
	0.5	1/3		D-H--20	1/3		D-H-20	
Exterior walls	3	1-1/2	100 sq. in.[c]	<=100 sq.in. = D-H-90 >100 sq.in D-H-W-90	Fire protection Not Permitted	Fire resistance 3	Fire protection Not Permitted	Fire resistance W-180
	2	1-1/2	100 sq. in.[c]	<=100 sq.in. = D-H-90 >100 sq.in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
				D-H- 45			D-H-NT-45	

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL[e]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)	FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL
	1	3/4	Maximum size tested		Fire Protection 3/4	
Smoke barriers	1	1/3[b]	Maximum size tested	D-20	Fire protection 3/4	D-H-OH-45

a. Two doors, each with a fire protection rating of 1-1/2 hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.
b. For testing requirements, see Section 715.5.3 ~~715.4.3~~.
c. Fire resistance rated glazing tested to ASTM E119 per section 715.2 shall be permitted, in the maximum size tested.
d. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 715.5.5.1.
e. Under the column heading "Fire rated glazing marking door vision panel", W refers to the fire-resistance rating of the glazing, not the frame.

Reason:
(Heilstedt) The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: http://www.iccsafe.org/cs/cc/ctc/index.html. Since its inception in April/2005, the CTC has held seventeen meetings - all open to the public.

This proposed change is a result of the CTC's investigation of the area of study entitled "Labeling of Fire Rated Glazing". The scope of the activity is noted as:

Identify root causes of problems selecting, specifying, installing, and inspecting fire protective and fire resistive glazing and other assembly components including the frames. Propose identification requirements and other related code changes.

The marking provisions of the IBC applicable to fire rated glazing ("Marking Provisions") were first adopted as a part of Chapter 7 of the IBC in 2004. In the last development cycle, the Fire Safety Committee recommended that the ICC Board consider submitting the marking of fire rated glazing to the Code Technology Committee (CTC) as an area of study since repeat proposals to change the Marking Provisions were being submitted on a regular basis.

The ICC Board referred the Marking Provisions to the CTC as an area of study and a Study Group (SG), Chaired Carl Wren, was formed. The SG consisted of both fire and building code officials; architects; engineers; fire rated window and door manufacturers; primary fire rated glazing manufacturers; and a fire protection engineer. It was recognized by the SG that the existing marking system, as those marks were designated in product listings, was leading to fire protection products in applications not allowed by the IBC. After numerous meetings and a full hearing before the CTC, the SG and the CTC unanimously approved proposing these changes to the IBC's Marking Provisions.

The primary objective of the CTC in proposing these changes is to make the Marking Provisions of Chapter 7 easier to understand and enforce and to minimize the possibility that the system could result in confusion between fire protection rated products in applications where fire-resistance rated products meeting ASTM E 119 are permitted. The proposal includes the following changes:

1- Adds a new Table 715.3, to define and relate the various test standards for fire rated glazing to the designations used to mark fire rated glazing. A new definition of the term "fire rated glazing" would also be included.

2- While the designations "W," "OH," "D," "DT," "DH" and "XXX" used to mark fire rated glazing will remain as they were originally adopted in 2004, the marking of fire rated glazing in fire door assemblies (D) are simplified by deleting the NH designation (not hose stream tested) and the NT designation (not temperature rise tested). It is clarified that those designations correspond to test standards, not end uses. Tables 715.4 and 715.5 show the markings required for acceptance in specified applications.

3- All text provision used to define and relate test standards to marking designations are deleted in favor of including all of the required marking provisions in Tables 715.3, 715.4 and 715.5. This is intended to provide building and fire code officials with easy access to all of the information needed when inspecting fire window and fire door installations, including required marking designations.

4- In connection with removing many of the text provisions referring to the marking of fire rated glazing and the inclusion of all pertinent marking requirements in tables 715.4 and 715.5, a number of columns are added to those Tables. These new columns specify the required designations that the building and fire code officials will need to look for when inspecting fire rated glazing in the various categories of fire resistance rated walls, fire door assemblies and fire window assemblies identified in Tables 715.4 and 715.5.

5- The size limitation provisions starting at 715.4.6.1 are re-written to eliminate the use of "exceptions" and thus clarify them - no substantive changes to these provisions are intended.

6- It was determined that Table 715.4 inadvertently omitted reference to 1 1/2 hour doors in shaft, exit enclosures and exit passageway walls and this proposal adds that reference to the Table.

7- The Marking Provisions have been written to clarify that fire protection rated glazing tested to NFPA 257 and used in transoms and sidelites in certain fire barriers and corridor walls will also have to be tested to NFPA 252 since they are a part of a door assembly. Accordingly, these glazings are marked D-H-OH-XXX.

(O'Keefe) The marking provisions of the IBC applicable to fire rated glazing ("Marking Provisions") were first adopted as a part of Chapter 7 of the IBC in 2004. In the last development cycle, the Fire Safety Committee recommended that the ICC Board consider submitting the marking of fire rated glazing to the Code Technology Committee (CTC) as an area of study since repeat proposals to change the Marking Provisions were being submitted on a regular basis, because of confusion and misuse of products being marked by individual manufacturers under the current system.

The ICC Board referred the Marking Provisions to the CTC as an area of study and a Study Group (SG), Chaired by Carl Wren, was formed. The SG consisted of both fire and building code officials; architects; engineers; fire rated window and door manufacturers; primary fire rated glazing manufacturers; and a fire protection engineer.

It was recognized by the SG that the existing marking system, as those marks were designated in product listings, was leading to the misuse of fire protection products in applications not allowed by the IBC. It was also recognized that "T" marking were being applied by some manufacturers to designate use of fire protection products in temperature rise doors that in fact did not limit temperature rise and should not be so marked. Attached as support are documents submitted to the CTC Labeling Study Group that show the confusion in listings showing end-use marks that are

not permitted by the IBC. After numerous meetings and a full hearing before the CTC, the SG and the CTC unanimously approved proposing these changes to the IBC's Marking Provisions.

The primary objective of the CTC in proposing these changes is to make the Marking Provisions of Chapter 7 easier to understand and enforce and to minimize the possibility that the system could result in confusion between fire protection rated products in applications where fire-resistance rated products meeting ASTM E 119 are required. The proposal includes the following changes:

1- Adds a new Table 715.3, to define and relate the various test standards for fire rated glazing to the designations used to mark fire rated glazing. A new definition of the term "fire rated glazing" would also be included.

2- While the designations "W," "OH," "D," "DT," "DH" and "XXX" used to mark fire rated glazing will remain as they were originally adopted in 2004, the marking of fire rated glazing in fire door assemblies (D) are simplified by deleting the NH designation (not hose stream tested) and the NT designation (not temperature rise tested). It is clarified that those designations correspond to compliance with test standards only, not that they are permitted for end uses. Tables 715.4 and 715.5 show the markings required for acceptance in specified applications.

3- All text provision used to define and relate test standards to marking designations are deleted in favor of including all of the required marking provisions in Tables 715.3, 715.4 and 715.5. This is intended to provide building and fire code officials with easy access to all of the information needed when inspecting fire window and fire door installations, including required marking designations.

4- In connection with removing many of the text provisions referring to the marking of fire rated glazing and the inclusion of all pertinent marking requirements in tables 715.4 and 715.5, a number of columns are added to those Tables. These new columns specify the required designations that the building and fire code officials will need to look for when inspecting fire rated glazing in the various categories of fire resistance rated walls, fire door assemblies and fire window assemblies identified in Tables 715.4 and 715.5.

5- The size limitation provisions starting at 715.4.6.1 are re-written to eliminate the use of "exceptions" and thus clarify them - no substantive changes to these provisions are intended.

6- It was determined that Table 715.4 inadvertently omitted reference to 1 1/2 hour doors in shaft, exit enclosures and exit passageway walls and this proposal adds that reference to the Table.

7- The Marking Provisions have been written to clarify that fire protection rated glazing tested to NFPA 257 and used in transoms and sidelites in certain fire barriers and corridor walls will also have to be tested to NFPA 252 since they are a part of a door assembly. Accordingly, these glazings are marked D-H-OH-XXX. It has also been clarified where fire rated glazing products must be tested to and marked as complying with ASTM E119 in sidelight and transom assemblies in openings requiring greater than ¾-hour protection, and for glazing sizes exceeding 100 sq. inches in doors rated 1-hour and greater.

8. Section 715.4.6.1 was revised to clarify labeling of door assembly components, and to recognize that door assemblies are permitted to have components labeled by different test agencies.

Bibliography: Examples of UL Listing Markings submitted to CTC Labeling Study Group.

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

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

ICCFILENAME: HEILSTEDT-FS3-702

FS108–09/10

716.1 (IMC 607.1), 716.1.1 (IMC 607.1.1), 716.2.2 (IMC 607.2.2)

Proponent: Vickie Lovell representing 3M Company

Revise as follows:

716.1 (IMC 607.1) General. The provisions of this section shall govern the protection of air duct penetrations and air transfer openings in assemblies required to be protected. Protection of exhaust ducts shall comply with Chapter 5 of the International Mechanical Code.

716.1.1 (IMC 607.1.1) Ducts that penetrate fire-resistance-rated assemblies without dampers. Ducts that penetrate fire-resistance-rated wall assemblies and are not required by this section to have dampers shall be protected as required for penetrations and shall comply with the requirements of Sections 713.2.1.1 through 713.3.3. Ducts that penetrate horizontal assemblies not required to be contained within a shaft and not required by this section to have dampers shall be protected as required for penetrations and comply with the requirements of Sections 713.4 through 713.4.2.2.

716.2 (IMC 607.2) Installation. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the manufacturer's installation instructions and listing and the dampers' listing.

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

716.2.2 (IMC 607.2.2) Hazardous exhaust ducts. Fire dampers for hazardous exhaust duct systems shall comply with the International Mechanical Code. Fire dampers, smoke dampers and combination fire/smoke dampers are prohibited in hazardous exhaust duct systems.

Reason: This section was written with better formatting to clarify where dampers are prohibited altogether. The change was based on Section 510.6.1 of the IMC. Dampers in hazardous ducts cannot "comply with the IMC" in hazardous exhaust ducts. They are not permitted.

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

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

ICCFILENAME: LOVELL-FS1-716.1

FS109–09/10
716.3.1 (IMC 607.3.1)

Proponent: Bob Eugene, representing Underwriters Laboratories Inc

Revise as follows:

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

Reason: The definition of "labeled" requires the approved agency to maintain periodic inspections of the product.

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

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

ICCFILENAME: Eugene-FS6-716.3.1

FS110–09/10
716.3.2.2, 716.3.2.3

Proponent: Bob Eugene, representing Underwriters Laboratories Inc

Revise as follows:

716.3.2.2 (IMC 607.3.2.2) Smoke damper ratings. Smoke damper leakage ratings shall ~~not~~ be ~~less than~~ Class I or II. Elevated temperature ratings shall not be less than 250 F (121 C).

716.3.2.3 (IMC 607.3.2.3) Combination fire/smoke damper ratings. Combination fire/smoke dampers shall have the minimum fire protection rating specified for fire dampers in Table 716.3.2.1 for the type of penetration and shall also have a minimum ~~Class II leakage rating and a minimum elevated temperature rating of 250 F (121 C)~~.smoke damper ratings as specified in Section 716.3.2.2.

Reason: Provides consistency in the wording for the smoke damper ratings, and clarity of the two acceptable leakage rating Classes.

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

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

ICCFILENAME: Eugene-FS7-716.3.2.2

FS111–09/10
716.5.3 (IMC 607.5.5)

Proponent: Guy McMann, Jefferson County Colorado, representing Colorado Association of Plumbing and Mechanical Officials (CAPMO)

Revise as follows:

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

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:
   1.1. ~~Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside; or~~ Sub-duct exhaust systems are installed in accordance with Sections 504.8 and 515 of the *International Mechanical Code*
   1.2. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the fire-resistance rated assembly; or
   1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 and where the fire damper will interfere with the operation of the smoke control system; or
   1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In ~~Group B and R occupancies~~ multi story buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where sub-duct exhaust systems are installed in accordance with Sections 504.8 and 515 of the *International Mechanical Code*.
   ~~2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a minimum wall thickness of 0.187 inch (0.4712 mm) (No. 26 gage).~~
   ~~2.2. That extend at least 22 inches (559 mm) vertically; and~~
   ~~2.3. An exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside.~~
3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
4. Smoke dampers are not required at penetrations of shafts where ducts are used as part of an approved mechanical smoke control system designed in accordance with Section 909 and where the smoke damper will interfere with the operation of the smoke control system.
5. Dampers, ~~F~~ fire dampers, ~~and~~ combination fire/smoke dampers and smoke dampers are not required in sub-duct ~~kitchen and clothes dryer~~ exhaust systems when installed in accordance with ~~the~~ Sections 504.8 and 515 of the *International Mechanical Code*.

Reason: This is an effort to update this section as it relates to sub-duct exhaust systems found in the Mechanical Code. There is no need to restate mechanical requirements in this section that are already covered in the Mechanical Code under exhaust system installation. This is intended as a steering mechanism to guide the user to the appropriate code sections. Sub-duct systems have been utilized for many years and they enjoy a good track record. These systems will work in any occupancy and there is no technical justification to limit their use to B and R occupancies. Item# 5 failed to include smoke dampers. Combination smoke/fire dampers are different than plain smoke dampers. This text will streamline this section by dispensing with unnecessary language.

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

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

ICCFILENAME: MCMANN-FS1-716.5.3.doc

FS112–09/10

716.5.3 (IMC 607.5.5)

Proponent: Robert Adkins representing Virginia Plumbing & Mechanical Inspectors Assn and Virginia Building and Code Officials Assn.

Revise as follows:

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

Exceptions:

1. Fire dampers are not required at penetrations of shafts where:
   1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside. Dampers shall not be installed in the shaft that have the ability to interrupt the continuous airflow upward ; or
   1.2. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly; or
   1.3. Ducts are used as part of an *approved* smoke control system designed and installed in accordance with Section 909 and where the *fire damper* will interfere with the operation of the smoke control system; or
   1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

(Exceptions not shown, remain unchanged)

Reason: The added wording will prevent a fire damper from being installed at the top of a shaft where the shaft isn't installed to the underside of the roof deck as allowed by IBC 708.12. The installation of such a fire damper, and the resulting disruption of a continuous upward airflow, would render the subduct protection useless and allow a fire to exit the rated shaft at unprotected openings. Where an exhaust duct utilizing subducts turns horizontal before penetrating the roof deck, the rated shaft must also turn horizontal and follow the exhaust duct to the roof penetration.

The new wording does allow for the combined use of a subduct penetration into the shaft from one exhaust location, along with a fire damper protected penetration into the shaft from another exhaust location if a designer chooses to combine these uses into one shaft.

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

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

ICCFILENAME: Adkins-FS1-716.5.3

FS113–09/10
716.5.3 (IMC 607.5.5)

Proponent: Dave Frable, US General Services Administration, representing the US General Services Administration

Revise as follows:

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

Exceptions:

1. *Fire dampers* are not required at penetrations of shafts where:
   1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside; or
   1.2. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the fire-resistance-rated assembly; or
   1.3. Ducts are used as part of an *approved* smoke control system designed and installed in accordance with Section 909 and where the *fire damper* will interfere with the operation of the smoke control system; or
   1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In Group B and R occupancies equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, *smoke dampers* are not required at penetrations of shafts where:

2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a minimum wall thickness of 0.187-inch (0.4712 mm) (No. 26 gage);
2.2. The subducts extend at least 22 inches (559 mm) vertically; and
2.3. An exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside.

3. *Smoke dampers* are not required at penetrations of shafts in Group B occupancies equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 where the air in ducts continues to move and the air handling system is configured to prevent recirculation of return or exhaust air upon fire conditions.

4.~~3.~~ *Smoke dampers* are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.

5.~~4.~~ *Smoke dampers* are not required at penetrations of shafts where ducts are used as part of an *approved* mechanical smoke control system designed in accordance with Section 909 and where the *smoke damper* will interfere with the operation of the smoke control system.

6.~~5.~~ *Fire dampers* and *combination fire/smoke dampers* are not required in kitchen and clothes dryer exhaust systems when installed in accordance with the *International Mechanical Code*.

Reason: The intent of this code change is to acknowledge that Group B occupancies protected by an operational fire sprinkler system where the air in ducts continues to move and the air handling system is configured to prevent recirculation of return or exhaust air upon fire conditions provides an acceptable level of safety for building occupants and therefore does not warrant the need for the installation of smoke dampers at all penetrations of shaft duct/air transfer opening penetrations. This code change proposes to remove the current requirement for smoke dampers in shaft wall penetrations, but leave fire dampers in place. This is because smoke travel through ducted ventilation shafts has not been a contributing factor to fire deaths in sprinklered Group B occupancies in recent history. Note: all high-rise office fires where smoke spread has been cited as a problem have either occurred in unsprinklered buildings, partially sprinklered buildings or buildings subject to terrorist attacks. 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 affect may cause smoke spread to other floors. It is also widely accepted that operating fire sprinklers will prevent room flashover and full floor fires, and will limit the size of room fires. The 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, these buildings have a number of additional safeguards in place. For example, the IMC and NFPA 90A both require duct smoke detectors to shut off of air handling equipment to minimize the potential of smoke spread through ventilation ducts. Also, the 2009 edition of the IBC now requires a number of additional safety enhancements such as: two way communication at 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; fire service access elevators for buildings greater than 120 feet; and an additional stair and redundant sprinkler risers for buildings greater than 420 feet, 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, we strongly believe that it is unreasonable to require smoke dampers in shaft duct/air transfer opening penetrations as an additional means for slowing or stopping the spread of smoke throughout a building.

Note: Though not relevant to this code change, NFPA 90A does not require smoke dampers in shaft walls regardless of whether the building is sprinklered. Also note that some jurisdictions (e.g., Commonwealth of Virginia) are granting similar modifications to the requirement for smoke dampers in exhaust ducts because it is impractical to comply with the IBC and there is no demonstrated need.

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

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

ICCFILENAME: Frable-FS1-716.5.3

FS114–09/10
716.5.4 (IMC 607.5.3)

Proponent: Tom Hedges, representing the Arizona Building Officials

Revise as follows:

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

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

1. Corridor walls in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a *through penetration* in accordance with Section 713.
2. Tenant partitions in *covered mall buildings* where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of *approved* materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
   3.1. The duct shall not exceed 100 square inches (0.06 m2).
   3.2. The duct shall be constructed of steel a minimum of 0.0217 inch (0.55 mm) in thickness.
   3.3. The duct shall not have openings that communicate the *corridor* with adjacent spaces or rooms.
   3.4. The duct shall be installed above a ceiling.
   3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
   3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 11/2-inch by 11/2-inch by 0.060-inch (38mmby 38mmby 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The *annular space* between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.
4. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, and are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

Reason: Currently the code is less restrictive for penetrations of a fire barrier than a fire partition. This proposal adds an additional exception for fire partitions. This proposal duplicates text of Section 716.5.2 Exception 3 as an exception 4 for fire partitions. It is logical to allow the exception for a wall type where the code places lesser restrictions on its use. This exception does not limit the size of a duct penetration as Exception 3 does currently. If this exception is acceptable for fire barriers, it should be acceptable for fire partitions.

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

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

ICCFILENAME: HEDGES-FS1-716.5.4

FS115–09/10
716.6.1 (IMC 607.6.1)

Proponent: Wesley R. Davis, representing Air Conditioning Contractors of America

Revise as follows:

716.6.1 (IMC 607.6.1) Through penetrations. In occupancies other than Groups I-2 and I-3, a duct constructed of approved materials in accordance with the International Mechanical Code that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection provided that a listed fire damper is installed at the floor line or the duct is protected in accordance wth Section 713.4. For air transfer openings, see Exception 7 to Section 708.2.

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

1. The duct shall be contained and located within the cavity of a wall, where the duct passes through occupied areas, and shall be constructed of steel having a minimum wall thickness of 0.187-inches (0.4712 mm) (No. 26 gage).
2. The duct shall open into only one *dwelling or sleeping unit* and the duct system shall be continuous from the unit to the exterior of the building.
3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m2) in any 100 square feet (9.3 m2) of floor area.

4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a *listed ceiling radiation damper* installed in accordance with Section 716.6.2.1.

Reason: This change will accurately reflect the requirement. Duct must be protected from damage from those in the occupied space, a wall provides that protection. In unoccupied spaces, such as interstitial ceiling/floor areas or attics, this requirement is unnecessary.

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

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

ICCFILENAME: Davis-FS1-716.6.1

FS116–09/10
716.6.3 (IMC 607.6.3)

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

Revise as follows:

716.6.3 (IMC 607.6.3) Non fire-resistance-rated floor assemblies. Duct systems constructed of *approved* materials in accordance
with the *International Mechanical Code* that penetrate non fire-resistance-rated floor assemblies shall be protected by any of the following methods:

1. A shaft enclosure in accordance with Section 708,or an *approved* alternative duct assembly that is a *listed* and *labelled* material, system, product or method of construction specifically evaluated for such purpose.
2. The duct connects not more than two *stories*, and the *annular space* around the penetrating duct is protected with an *approved* noncombustible material that resists the free passage of flame and the products of combustion.
3. The duct connects not more than three *stories*, and the *annular space* around the penetrating duct is protected with an *approved* noncombustible material that resists the free passage of flame and the products of combustion and a *fire damper* is installed at each floor line.

   Exception: *Fire dampers* are not required in ducts within individual residential *dwelling units*.

Reason: To introduce alternative methods for protection of ducts penetrating non fire-resistance rated assemblies. The protection of these ducts can be accomplished using *approved* alternative duct enclosures that are *listed* and *labelled* systems or product specifically evaluated for such purpose. There are alternative methods available for providing protection for duct enclosures beyond the existing shaft provisions.

Substantiation: For these applications, Section 708 requires shafts to be constructed as *fire barriers* in accordance with Section 707 or *horizontal assemblies* in accordance with Section 712. There are potentially cost-effective alternatives for protection of penetrations through non fire-resistance rated assemblies.

As an example, in November of 2005, ICC-ES approved the publication of AC 179, *Acceptance Criteria for Metallic HVAC Duct Enclosure Assemblies,* which can be used to evaluate products used for these applications. The purpose of the acceptance criteria is to establish requirements for fire protection enclosure systems applied to metallic HVAC ducts, as alternatives to shaft enclosures for vertical ducts with required fire-resistance-rated shafts under specified conditions, with limitations on their application. The criteria also provides an alternate to fire dampers in horizontal ducts (penetrating fire barriers, fire partitions, and or smoke barriers) and vertical ducts connecting not more than two stories. AC 179 evaluates the enclosure materials and the HVAC duct enclosure systems using the following test methods: Flame spread, smoulder resistance, a fire engulfment test based on ISO 6944 with a through-penetration fire stop, durability tests, and thermal conductivity.

Another example of a listed and labeled system which could potentially fulfill this function are systems tested in conformance with the ASTM E2336, *Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems*. This standard evaluates enclosure materials and the duct enclosure systems using the following test methods: non-combustibility, full scale fire resistance, durability, internal fire, and fire-engulfment with a through-penetration fire stop. Enclosure systems which meet the ASTM E2336 criteria demonstrate the ability to resist the passage of flames and hot gases during a standardized fire resistance test and a standardized internal fire test, as well as an ability to resist transmission of heat through the duct and the enclosure material(s). The ability of a fire stop to meet the requirements of Test Method E 814 when used with the duct enclosure system is also evaluated. The test method prescribes an ASTM E119 fire exposure for both a fire engulfment and a fire resistance wall test. The fire resistance test illustrates the ability of the enclosure material to resist the effects of fire when applied in a vertical application (i.e. as a wall assembly tested in accordance with ASTM E119).

In addition, an internal fire test uses two standardized fire exposures occurring inside the protected duct itself. Both tests illustrate the enclosure material's ability to resist thermal transmission of heat to the unexposed side in a horizontal application. The first standardized fire exposure is intended to simulate long term exposure of the enclosure material to a standardized service condition. The test simulates an internal fire within the duct by maintaining a minimum 500°F (260°C) average interior temperature for at least 4 h. The second standardized fire exposure is intended to simulate a sudden rise in the exposure conditions within the duct. Within 15 min after the end of the 4-h period, increase the average

interior temperature in the duct is increased to 2000°F (1093°C). This exposure is then maintained for 30 minutes, which simulates a large fire event within the duct. The current provisions of 5.10.8.2 do not explicitly take this into account. A durability test is included for the materials, which is intended to simulate the effects of long-term exposure of typical in-service conditions on the thermal transmission qualities of the enclosure materials when subjected to a modified version of Test Method C 518. A fire-engulfment test uses a standardized fire exposure, the time temperature curve of Test Methods E 119, to simulate a fire occurring on the outside of the grease duct, and demonstrates the ability of the duct enclosure system to remain intact without a through opening. The fire-engulfment test also tests the fastening methods used to secure the enclosure material to the grease duct and the supporting system. The fire-engulfment test also provides a means to test a through-penetration fire stop to determine its compatibility with the duct enclosure system. The fire-engulfment and vertical fire resistance tests are followed by the application of a standardized hose stream test.

Work is currently underway on the development of an ASTM Consensus Standard for this application, but until such time as that process is complete, the proposed language incorporated here will provide a means of evaluating the performance of these products and systems, which are becoming more widespread in their use, while not restricting the choice of acceptable solutions available to designers.

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

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

ICCFILENAME: CRIMI-FS2-716.6.3

FS117–09/10

716.1, 716.5, 716.5.1, 716.5.1.1, 716.5.2, 716.5.2.1, 716.5.3, 716.5.4, 716.5.4.1, 716.5.5. 716.5.6, 716.5.7, 716.6, 716.6.1, 716.6.2, 716.6.2.1, 716.6.3, 716.2, 716.2.1, 716.2.2, 716.1.1.1 (IMC 607.1, 607.5, 907.5.1, 607.5.1.1, 907.5.2, 607.5.2.1, 607.5.5, 607.5.3, 607.5.4, 607.5.6, 607.5.7, 607.6, 607.6.1, 607.6.2, 607.6.2.1, 607.6.3, 607.1.1, 607.2, 607.2.1, 607.2.2, 607.1.1.1, 607.7)

Proponent: Sarah A. Rice, CBO, representing self

Revise as follows:

SECTION 716 DUCTS AND AIR TRANSFER OPENINGS

716.1 (IMC 607.1) General. The provisions of this section shall govern the protection of duct penetrations and air transfer openings in assemblies required to be protected.

~~**716.5**~~ **716.2 (IMC 607.5) Where required.** *Fire dampers, smoke dampers* and *combination fire/smoke dampers* shall be provided at the locations prescribed in Sections 716.2.1 through 716.2.7 and 716.6. Where an assembly is required to have both *fire dampers* and *smoke dampers*, *combination fire/smoke dampers* or a *fire damper* and a *smoke damper* shall be required.

~~**716.5.1**~~ **716.2.1 (IMC 607.5.1) Fire walls.** Ducts and air transfer openings permitted in *fire walls* in accordance with Section 706.11 shall be protected with *listed fire dampers* installed in accordance with their listing.

~~**716.5.1.1**~~ **716.2.1.1 (IMC 607.5.1.1) Horizontal exits.** A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *fire wall* that serves as a horizontal *exit*.

~~**716.5.2**~~ **716.2.2 (IMC 607.5.2) Fire barriers.** Ducts and air transfer openings of *fire barriers* shall be protected with *approved fire dampers* installed in accordance with their listing. Ducts and air transfer openings shall not penetrate *exit* enclosures and *exit* passageways except as permitted by Sections 1022.4 and 1023.6, respectively.

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

1. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the fire-resistance-rated assembly.
2. Ducts are used as part of an *approved* smoke control system in accordance with Section 909 and where the use of a *fire damper* would interfere with the operation of a smoke control system.
3. Such walls are penetrated by ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group Hand are in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

~~716.5.2.1~~ **716.2.2.1 (IMC 607.5.2.1) Horizontal exits.** A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *fire barrier* that serves as a horizontal *exit*.

~~716.5.3~~ **716.2.3 (IMC 607.5.5) Shaft enclosures.** Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with *approved* fire and smoke *dampers* installed in accordance with their listing.

Exceptions:

1. *Fire dampers* are not required at penetrations of shafts where:
   1.1. Steel exhaust subducts are extended at least 22 inches (559 mm) vertically in exhaust shafts, provided there is a continuous airflow upward to the outside; or
   1.2. Penetrations are tested in accordance with ASTM E 119 or UL 263 as part of the fire-resistance-rated assembly; or
   1.3. Ducts are used as part of an *approved* smoke control system designed and installed in accordance with Section 909 and where the *fire damper* will interfere with the operation of the smoke control system; or
   1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In Group B and R occupancies equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, *smoke dampers* are not required at penetrations of shafts where:
   2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a minimum wall thickness of 0.187-inch (0.4712 mm) (No. 26 gage);
   2.2. The subducts extend at least 22 inches (559 mm) vertically; and
   2.3. An exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outside.
3. *Smoke dampers* are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
4. *Smoke dampers* are not required at penetrations of shafts where ducts are used as part of an *approved* mechanical smoke control system designed in accordance with Section 909 and where the *smoke damper* will interfere with the operation of the smoke control system.
5. *Fire dampers* and *combination fire/smoke dampers* are not required in kitchen and clothes dryer exhaust systems when installed in accordance with the *International Mechanical Code*.

~~716.5.4~~ **716.2.4 (IMC 607.5.3) Fire partitions.** Ducts and air transfer openings that penetrate *fire partitions* shall be protected with *listed fire dampers* installed in accordance with their listing.

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

1. Corridor walls in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a *through penetration* in accordance with Section 713.
2. Tenant partitions in *covered mall buildings* where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of *approved* materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
   3.1. The duct shall not exceed 100 square inches (0.06 m_2).
   3.2. The duct shall be constructed of steel a minimum of 0.0217 inch (0.55 mm) in thickness.
   3.3. The duct shall not have openings that communicate the *corridor* with adjacent spaces or rooms.
   3.4. The duct shall be installed above a ceiling.
   3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
   3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum $1_1/_2$-inch by $1_1/_2$-inch by 0.060-inch (38mmby 38mmby 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The *annular space* between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.

~~716.5.4.1~~ **716.2.4.1 (IMC 607.5.4) Corridors.** A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *corridor* enclosure required to have smoke and draft control doors in accordance with Section 715.4.3.

Exceptions:

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

~~716.5.5~~ **716.2.5 (IMC 607.5.4) Smoke barriers.** A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *smoke barrier*. *Smoke dampers* and *smoke damper* actuation methods shall comply with Section 716.3.3.2.

Exception: *Smoke dampers* are not required where the openings in ducts are limited to a single smoke compartment and the ducts are constructed of steel.

~~716.5.6~~ **716.2.6 (IMC 607.5.6) Exterior walls.** Ducts and air transfer openings in fire-resistance-rated *exterior walls* required to have protected openings in accordance with Section 705.10 shall be protected with *listed fire dampers* installed in accordance with their listing.

~~716.5.7~~ **716.2.7 (IMC 607.5.7) Smoke partitions.**A*listed smoke damper* designed to resist the passage of smoke shall be provided at each point that an air transfer opening penetrates a smoke partition. *Smoke dampers* and *smoke damper* actuation methods shall comply with Section 716.3.3.2.

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

~~716.6~~ **716.3 (IMC 607.6) Horizontal assemblies.** Penetrations by ducts and air transfer openings of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected by a shaft enclosure that complies with Section 708 or shall comply with Sections 716.3.1 through 716.3.3.

~~716.6.1~~ **716.3.1 (IMC 607.6.1) Through penetrations.** In occupancies other than Groups I-2 and I-3, a duct constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two *stories* is permitted without shaft enclosure protection, provided a *listed fire damper* is installed at the floor line or the duct is protected in accordance with Section 713.4. For air transfer openings, see Exception 7 to Section 708.2.

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

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0.187 inches (0.4712 mm) (No. 26 gage).
2. The duct shall open into only one *dwelling or sleeping unit* and the duct system shall be continuous from the unit to the exterior of the building.
3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m_2) in any 100 square feet (9.3 m_2) of floor area.
4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance- rated floor/ceiling or roof/ceiling assembly shall be protected with a *listed ceiling radiation damper* installed in accordance with Section 716.6.2.1.

~~716.6.2~~ **716.3.2 (IMC 607.6.2) Membrane penetrations.** Ducts and air transfer openings constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrate the ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with one of the following:

1. A shaft enclosure in accordance with Section 708.

2. A *listed ceiling radiation damper* installed at the ceiling line where a duct penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.
3. A *listed ceiling radiation damper* installed at the ceiling line where a diffuser with no duct attached penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.

~~716.6.2.1~~ 716.3.2.1 **(IMC 607.6.2.1) Ceiling radiation dampers.** *Ceiling radiation dampers* shall be tested as part of a fire-resistance-rated floor/ceiling or roof/ceiling assembly in accordance with ASTME 119 orUL263. *Ceiling radiation dampers* shall be installed in accordance with the details *listed* in the fire-resistance-rated assembly and the manufacturer's installation instructions and the listing. *Ceiling radiation dampers* are not required where either of the following applies:

1. Tests in accordance with ASTM E 119 or UL 263 have shown that *ceiling radiation dampers* are not necessary in order to maintain the *fire-resistance rating* of the assembly.
2. Where exhaust duct penetrations are protected in accordance with Section 713.4.1.2, are located within the cavity of a wall and do not pass through another *dwelling unit* or tenant space.

~~716.6.3~~ 716.3.3 **(IMC 607.6.3) Nonfire-resistance-rated floor assemblies.** Duct systems constructed of *approved* materials in accordance with the *International Mechanical Code* that penetrate nonfire-resistance-rated floor assemblies shall be protected by any of the following methods:

1. A shaft enclosure in accordance with Section 708.
2. The duct connects not more than two *stories*, and the *annular space* around the penetrating duct is protected with an *approved* noncombustible material that resists the free passage of flame and the products of combustion.
3. The duct connects not more than three *stories*, and the *annular space* around the penetrating duct is protected with an *approved* noncombustible material that resists the free passage of flame and the products of combustion and a *fire damper* is installed at each floor line.

   Exception: *Fire dampers* are not required in ducts within individual residential *dwelling units*.

~~716.1.1~~ 716.3 **(IMC 607.1.1) Ducts that penetrate fire-resistance-rated assemblies without dampers.** Ducts that penetrate fire-resistance-rated assemblies and are not required by this section to have *dampers* shall comply with the requirements of Sections 713.2 through 713.3.3. Ducts that penetrate *horizontal assemblies* not required to be contained within a shaft and not required by this section to have *dampers* shall comply with the requirements of Sections 713.4 through 713.4.2.2.

~~716.2~~ 716.4 **(IMC 607.2) Installation.** *Fire dampers, smoke dampers, combination fire/smoke dampers* and *ceiling radiation dampers* located within air distribution and smoke control systems shall be installed in accordance with the requirements of this section, the manufacturer's installation instructions and the *dampers*' listing.

~~716.2.1~~ 716.4.1 **(IMC 607.2.1) Smoke control system.** Where the installation of a fire *damper* will interfere with the operation of a required smoke control system in accordance with Section 909, *approved* alternative protection shall be utilized. Where mechanical systems including ducts and *dampers* utilized for normal building ventilation serve as part of the smoke control system, the expected performance of these systems in smoke control mode shall be addressed in the rational analysis required by Section 909.4.

716.4.2 ~~716.2.2~~ (IMC 607.2.2) Hazardous exhaust ducts. *Fire dampers* for hazardous exhaust duct systems shall comply with the *International Mechanical Code*.

716.4.3 ~~716.1.1.1~~ (IMC 607.1.1.1) Ducts that penetrate nonfire-resistance- rated assemblies. The space around a duct penetrating a nonfire-resistance-rated floor assembly shall comply with Section 716.6.3.

Sections 716.3 – 716.4 to become Sections 716.5 – 716.6. *(Content unchanged)*

716.7 (IMC 607.7) Flexible ducts and air connectors. *(No change to text)*

Reason: This code change is one in a series of code changes intended to add clarity to the provisions of Chapter 7. Unless otherwise specifically stated, each code change can be accepted on its own merits.

This code change addresses and Section 716 (Ducts and Air Transfer Openings). This proposal is intended to accomplish several things:

Reorganization to bring the “where required” sections to the front. As a code user, the primary piece of information needed is – is a damper is even needed. If not there is no need to go any further in the section, if a damper is required, then the user will need to know the other elements that go with the devices, e.g., installation details, testing, etc. The proposed reorganization follows the format which is used for the sprinkler and fire alarm sections of the code;
Clarification regarding what types of other protection are required when a damper is not required by Section 716;
Clarification and simplification of the exceptions.

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-FS1L-716

FS118–09/10
717.2.1; IRC R302.11.1

Proponent: Rick Thornberry, PE, The Code Consortium, Inc., representing Cellulose Insulation Manufacturers Association (CIMA)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise as follows:

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

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

PART II – IRC BUILDING/ENERGY

Revise as follows:

R302.11.1 Fireblocking materials. Except as provided in Section R302.11, Item 4, fireblocking shall consist of the following materials:

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 23/32-inch (18.3 mm) wood structural panels with joints backed by 23/32-inch (18.3 mm) wood structural panels.
4. One thickness of ¾-inch (19.1 mm) particleboard with joints backed by ¾-inch (19 mm) particleboard.
5. One-half-inch (12.7 mm) gypsum board.
6. One-quarter-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of mineral wool or glass fiber or other approved materials installed in such a manner as to be securely retained in place.
8. Spray-applied cellulose insulation installed as tested for the specific application.

Reason: This code change simply adds a new Item 8 to the list of fireblocking materials to recognize spray-applied cellulose insulation as a suitable fireblocking material. It qualifies the use of spray-applied cellulose insulation by indicating that it must be installed as tested for the specific application. The Cellulose Insulation Manufacturers Association (CIMA) has conducted a variety of fireblocking fire tests based on the ASTM E119 time-temperature fire curve exposure to demonstrate that spray-applied cellulose insulation will serve as an adequate fireblocking material.

It should be noted that spray-applied cellulose insulation is different than loose-fill cellulose insulation in that it is sprayed in place using a nozzle under pressure with a small quantity of water added to the insulation to activate the adhesive that, when dried, holds the cellulose insulation in place. Thus, it can be exposed in vertical applications, as well as horizontal applications. Furthermore, it will remain in place after it has dried without any need to restrain or otherwise contain or enclose it.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: Thornberry-FS4-717.2.1; RB-1-R302.11.1

FS119–09/10
717.2.6

Proponent: Rick Thornberry, PE, Jesse J. Beitel, The Code Consortium, Inc., Hughes Associates, Inc., representing Trespa North America, Ltd.

Revise as follows:

717.2.6 ~~Architectural trim~~ Exterior Wall Coverings. Fireblocking shall be installed within concealed spaces of exterior wall coverings ~~finish~~ and other exterior architectural elements where permitted to be of combustible construction as specified in Section 1406 or where erected with combustible frames.~~,~~ Fireblocking shall be installed at maximum intervals of 20 feet (6096 mm)~~,~~ in either dimension so that there will be no ~~open~~ concealed space exceeding 100 square feet (9.3m^3) between fireblocking. Where wood furring strips are used, they shall be of approved wood of natural decay resistance or preservative-treated wood. If noncontinuous, such elements shall have closed ends, with at least 4 inches (102 mm) of separation between sections.

Exceptions:

1. Fireblocking of cornices is not required in single-family dwellings. Fireblocking of cornices of a two-family dwelling is required only at the line of dwelling unit separation.
2. Fireblocking shall not be required where the exterior wall covering is installed on noncombustible framing and the face of the exterior wall covering ~~finish~~ exposed to the concealed space is covered by one of the following materials:
   2.1. Aluminum having a minimum thickness of 0.019 inch (0.5 mm).
   2.2. Corrosion-resistant steel having a base of metal thickness not less than 0.016 inch (0.4 mm) at any point.
   2.3. Other approved noncombustible materials.
3. Fireblocking shall not be required where the exterior wall covering has been tested in accordance with, and complies with the acceptance criteria of, NFPA 285. The exterior wall covering shall be installed as tested in accordance with NFPA 285.

Reason: This proposed code change contains editorial revisions to clarify the text as well as a proposed new Exception 3.

The editorial clarifications are proposed to utilize consistent terminology based on the definition for “Exterior Wall Coverings” found in Section 1402.1. It also clarifies how the required fireblocking is to be installed in the concealed space between the exterior wall covering and the exterior wall face.

Exception 3 is being proposed to allow the omission of the fireblocking required by this section in those cases where the exterior wall covering has been tested in accordance with NFPA 285 Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonload-Bearing Wall Assemblies Containing Combustible Components and complies with the acceptance criteria therein as indicating successful performance for resisting exterior fire and flame spread along the face of and within the interior cavities of the exterior wall system. It follows that if the exterior wall covering installation meets successful performance based on the NFPA 285 exterior wall fire test, there is no need to install fireblocking within the concealed space of the exterior wall created by the installation of the exterior wall covering since it has demonstrated the ability to resist the spread of fire and flame within the concealed space. In fact, the NFPA 285 test is used to qualify combustible materials for use on exterior walls of buildings of Types I, II, III, and IV construction which are otherwise required to be of noncombustible construction. And it is specifically referenced in Section 1407 for metal composite materials (MCM) and Section 2603.5 for foam plastic insulated exterior walls.

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

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

ICCFILENAME: Thornberry-Beitel-FS11-717.2.6

FS120–09/10
717.3.2

Proponent: Jeff Hugo, CBO, representing National Fire Sprinkler Association

Revise as follows:

717.3.2 Groups R-1, R-2, R-3 and R-4. Draftstopping shall be provided in floor/ceiling spaces in Group R-1 buildings, in Group R-2 buildings with three or more dwelling units, in Group R-3 buildings with two dwelling units and in Group R-4 buildings. Draftstopping shall be located above and in line with the dwelling unit and sleeping unit separations.

Exceptions:

1. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed spaces where the draftstopping is being omitted.

Reason: Section 903.3.1.2 refers to NFPA 13R, which does not require sprinklers in the concealed floor/ceiling assemblies, other combustible concealed spaces, and attics. However, the wording of this section often leads to misinterpretation by the AHJ or designer to install sprinklers in all these spaces exempted by NFPA 13R. The intent of this section is to eliminate the draftstopping above the sleeping unit or dwelling spaces in the attic space, if the attic is sprinklered, and the inserted new text further clarifies 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

ICCFILENAME: HUGO-FS1-717.3.2

FS121–09/10
717.4.2

Proponent: Jeff Hugo, CBO, representing National Fire Sprinkler Association

Revise as follows:

717.4.2 Groups R-1 and R-2. Draftstopping shall be provided in attics, mansards, overhangs or other concealed roof spaces of Group R-2 buildings with three or more dwelling units and in all Group R-1 buildings. Draftstopping shall be installed above, and in line with, sleeping unit and dwelling unit separation walls that do not extend to the underside of the roof sheathing above.

Exceptions:

1. Where corridor walls provide a sleeping unit or dwelling unit separation, draftstopping shall only be required above one of the corridor walls.
2. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. In occupancies in Group R-2 that do not exceed four stories above grade plane, the attic space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m2) or above every two dwelling units, whichever is smaller.
4. Draftstopping is not required in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.2, provided that automatic sprinklers are also installed in the combustible concealed space. where the draftstopping is being omitted.

Reason: Section 903.3.1.2 refers to NFPA 13R, which does not require sprinklers in the concealed floor/ceiling assemblies, other combustible concealed spaces, and attics. However, the wording of this section often leads to misinterpretation by the AHJ or designer to install sprinklers in all these spaces exempted by NFPA 13R. The intent of this section is to eliminate the draftstopping above the sleeping unit or dwelling spaces in the attic space, if the attic is sprinklered, and the inserted new text further clarifies 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

ICCFILENAME: HUGO-FS2-717.4.2

FS122–09/10
719.1

Proponent: Tony Crimi, A.C. Consulting Solutions Inc., representing North American Insulation Manufacturers Association

Revise as follows:

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

Exceptions:

2. Foam plastic insulation shall comply with Chapter 26 and have a smoke developed index of not more than 450.

(Exceptions not shown, remain unchanged)

Reason: The exception for foamed plastics in Chapter 26 does not adequately cover smoke developed performance of foamed plastics. Current requirements for glass fiber, mineral fiber, cellulose and reflective plastic core insulation all require both flame spread and smoke development requirements either based on ASTM E84 or UL 723 or 803.1.2. Alternative methods are acceptable for use, however, their performance level needs to address the same hazards as the base requirement, plus any additional hazards that might arise as a result of a specific material.

Justification: For all other thermal and sound insulating materials within the IBC, **including non-combustible insulation materials**, the minimum performance level for materials permitted to be used includes at least some requirements for both flame spread (fire growth) and smoke production. These requirements are primarily based on either ASTM E84 testing or alternative methods such as NFPA 286, CAN/ULC-S102.2, or even UL 1715 with the inclusion of the criterion from 803.1.2. However, in the case of foamed plastics, of the four alternative test methods permitted by 2603.9, only NFPA 286 contains any limits on smoke developed for any foamed plastics by virtue of the inclusion of a reference to section 803.1.
Room corner tests such as FM 4880, UL 1040, NFPA 286 or UL 1715 do evaluate fire growth and flashover. However, with the exception of the criteria for NFPA 286 in 803.1.2, the pass/fail criteria proposed for the room corner tests in the proposed acceptance criteria do not include quantitative evaluation of smoke density. Criteria for fire and smoke performance of building materials are based as much on issues arising from smoke production from burning materials, and smoke migration within the occupied spaces. It is not reasonable to provide an exception to the basic ASTM E84 flame spread and smoked developed requirements which apply to all other types of insulations, even noncombustible insulations, for foamed plastics based on room corner tests unless the limits on smoke production are applied to all of the room corner tests.
There are numerous reported instances of the hazards associated with smoke production from building materials. One is the tragic fire at the Greenwood Health Center in Hartford, CT on Feb 26 2003. The New York Times quoted Chief Charles A. Teale of the Hartford Fire Department as stating that "Most of the 10 residents killed, ranging in ages from 27 to 76, died of smoke inhalation". The same article further goes on to quote officials as saying: "The nursing home itself suffered little damage, though, and the fire was put out in about 15 minutes. Most of the residents were then led back inside, and by midday, 84 of the 148 residents remained at the center".

It is reasonable to allow alternative methods of testing materials to determine their acceptability for use, however, their performance criteria needs to address the same hazards as the base requirement, plus any additional hazards that might arise as a result of a specific material.

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

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

ICCFILENAME: CRIMI-FS8-719.1

FS123–09/10
719.7

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

Revise as follows:

719.7 Insulation and covering on pipe and tubing. Insulation and covering on pipe and tubing shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450. This shall include insulation coverings on exposed water supply and drainpipes under accessible lavatories and sinks.

Exception: Insulation and covering on pipe and tubing installed in plenums shall comply with the *International Mechanical Code.*

Reason: There have been some statements that insulation coverings required on exposed water supply and drainpipes for ADA compliance are not really insulation products and, therefore, need to comply with the requirements for insulation in the IBC. This code proposal is simply clarification.

The ADA requires that exposed hot water and drainpipes under lavatories and sinks be insulated (sections 4.19.4 and 4.24.6). The ICC/ANSI A117.1/2003 Standard (Accessible and Usable Buildings and Facilities 606.6 Exposed Pipes and Surfaces) states that: "*Water supply and drainpipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.*" This indicates that we are dealing with an exposed insulation product or material.

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

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

ICCFILENAME: HIRSCHLER-FS2-719.7.doc

FS124–09/10

202 (New); IPC 202 (New); IRC 202 (New)

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

THESE PROPOSALS ARE ON THE AGENDAS FOR THE IBC GENERAL AND THE IRC BUILDING/ENERGY CODE DEVELOPMENT COMMITTEES AS THREE SEPARATE CODE CHANGES. SEE THE TENTATIVE HEARING ORDER FOR THOSE COMMITTEES.

PART I – IBC GENERAL

Add new definition as follows:

SECTION 202
DEFINITIONS

INSULATION. Protective layer or covering, usually described based on its location, function or composition. Examples include acoustical insulation, cavity-wall insulation, duct insulation, foam-plastic insulation, loose-fill insulation, pipe insulation and thermal insulation.

Acoustical Insulation. Insulation material or assembly of materials used as a means for reducing the intensity of sound; also known as soundproofing.

Dust Insulation. Insulation which is in a form suitable for application to surfaces of ducts, air ducts or plenums.

Pipe Insulation. Insulation which is in a form suitable for application to cylindrical surfaces.

Thermal Insulation. Insulation material or assembly of materials used to reduce unwanted heat losses.

PART II – IPC

Add new definition as follows:

SECTION 202
DEFINITIONS

INSULATION. Protective layer or covering, usually described based on its location, function or composition. Examples include acoustical insulation, cavity-wall insulation, duct insulation, foam-plastic insulation, loose-fill insulation, pipe insulation and thermal insulation.

PART III – IRC BUILDING/ENERGY

Add new definition as follows:

SECTION R202
DEFINITIONS

INSULATION. Protective layer or covering, usually described based on its location, function or composition. Examples include acoustical insulation, cavity-wall insulation, duct insulation, foam-plastic insulation, loose-fill insulation, pipe insulation and thermal insulation.

Reason: (IBC) The concept of insulation is well understood, but it is usually considered to be associated purely with thermal insulation (heat losses). However, insulation is also used, often, for acoustical (sound) and other purposes. Moreover, insulation can be used as a layer within cavity walls, behind interior finish materials and on the outside of pipes and ducts; this is usually, but not always, done to protect from heat losses. However, this term remains undefined and there is a belief by some that the term insulation applies only to thermal insulation (often concealed).

Several IBC chapters address insulations of various types and they are not always referencing concealed thermal insulation. This includes IBC sections 603.1 and 807, which address acoustical insulation as well as thermal, and Section 719.1, which addresses pipe and duct insulation, and describes acoustical insulation materials (or sound-insulating materials). It is important for the IBC to have the appropriate definitions.

"**603.1 Allowable materials.** Combustible materials shall be permitted in buildings of Type I or Type II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:
2. Thermal and acoustical insulation, other than foam plastics, having a flame spread index of not more than 25.
Exceptions:
1. Insulation placed between two layers of noncombustible materials without an intervening airspace shall be allowed to have a flame spread index of not more than 100.
2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a flame spread index of not more than 200."

"**SECTION 719 - THERMAL- AND SOUND-INSULATING MATERIALS**
719.1 General. Insulating materials, including facings such as vapor retarders and *vapor-permeable membranes*, similar coverings and all layers of single and multilayer reflective foil insulations, shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E 84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted.
Exceptions:
1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *International Mechanical Code*."

"**807 Insulation.** Thermal and acoustical insulation shall comply with Section 719."

Reason: (IPC) The concept of insulation is well understood, but it is usually considered to be associated purely with thermal insulation (heat losses). However, insulation is also used, often, for acoustical (sound) and other purposes. Moreover, insulation can be used as a layer within cavity walls, behind interior finish materials and on the outside of pipes and ducts; this is usually, but not always, done to protect from heat losses. However, this term remains undefined and there is a belief by some that the term insulation applies only to thermal insulation (often concealed).

Reason: (IRC) The concept of insulation is well understood, but it is usually considered to be associated purely with thermal insulation (heat losses). However, insulation is also used, often, for acoustical (sound) and other purposes. Moreover, insulation can be used as a layer within cavity walls, behind interior finish materials and on the outside of pipes and ducts; this is usually, but not always, done to protect from heat losses. However, this term remains undefined and there is a belief by some that the term insulation applies only to thermal insulation (often concealed).

Cost Impact:

PART I – IBC - GENERAL

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

PART I – IPC

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

PART I – IRC – B/E

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

ICCFILENAME: HIRSCHLER-G7-202.doc

FS125–09/10
Table 720.1(2)

Proponent: Sam Francis representing American Forest & Paper Association

Revise as follows:

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

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE [b] (INCHES)			
			4 hour	3 hour	2 hour	1 hour
15. Exterior or interior walls (continued)	15-1.16[q]	2″ X 6" wood studs at 24" with double top plates, single bottom plate; interior and exterior sides covered with two layers of 5/8" Type X gypsum wallboard, 4', wide, applied horizontally with vertical joints over studs. Base layer fastened with 2-1/4" Type S drywall screws, spaced 24" on center and face layer fastened with Type S drywall screws, spaced 8" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Cavity to be filled with 5-1/2" mineral wool insulation.	—	—	~~7-3/4~~ 8	—
16. Exterior walls rated for fire resistance from the inside only in accordance with Section 705.5. (continued)	16-1.3[q]	2″X 6″ wood studs at 16″ centers with double top plates, single bottom plates; interior side covered with 5/8″ Type X gypsum wallboard, 4″ wide, applied vertically with all joints over framing or blocking and fastened with 2-1/4″ Type S drywall screws spaced 7″ on center. Joints to be covered with tape and joint compound. Exterior covered with 3/8″ wood structural panels (oriented strand board), applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12″ on center in the field and 6″ on center on panel edges. R-19 fiberglass insulation installed in stud cavity.	—	—	—	6-1/2

q. The design stress of studs shall be equal to a maximum of 100 percent of the allowable F'_c calculated in accordance with Section 2306.

(Footnotes not shown, remain unchanged)

Reason: Editorial corrections to the table

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

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

ICCFILENAME: FRANCIS-FS5-TABLE 720.1(2)

FS126–09/10
Table 720.1(2)

Proponent: Brad Douglas, representing American Forest & Paper Association

Revise as follows:

TABLE 720.1(2)
RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS
(No changes to the table)

m. For studs with a slenderness ratio, l_e/d, greater than 33, the ~~The~~ design stress ~~of studs~~ shall be reduced to 78 percent of allowable F_c'. For studs with a slenderness ratio, l_e/d, not exceeding 33, the design stress shall be reduced to 78 percent of the adjusted stress F_c' calculated for studs ~~with the maximum not greater than 78 percent of the calculated stress with studs~~ having a slenderness ratio l_e/d of 33.

(Footnotes not shown remain unchanged)

Reason: Revisions clarify application of the footnote with regard to stud slenderness ratio and update terminology from “allowable” to “adjusted” to be consistent with terminology used in 2005 NDS.

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

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

ICCFILENAME: FRANSIS-FS6-TABLE 720.1(2)

FS127–09/10
Table 720.1(3)

Proponent: Sam Francis representing American Forest & Paper Association

Add new text as follows:

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

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hr	3 hr	2 hr	1 hr	4 hr	3 hr	2 hr	1 hr
30. Wood I-joist (minimum I-joist depth 9-1/2" with a minimum flange depth of 1-1/2" and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of 3/8") @24" o.c. Fiberglass insulation placed between I-joists supported by the resilient channels.	30-1.1	Minimum 0.019" thick resilient channel 16" o.c. (Channels doubled at wallboard end joints), placed perpendicular to the joists and attached to each joist by 1-1/4" Type S drywall screws. Two Layers of ½" Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1-1/4" Type S drywall screws spaced 12" o.c. and the face layer is fastened with 1-5/8" Type S drywall screws spaced 12" o.c. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. Face layer to also be attached to base layer with 1-1/2" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.	=	=	—	Varies	—	—	—	5/8

Reason: Many code officials have come to rely upon Table 720 as the preferred source of information regarding fire resistance rated assemblies. Because of its importance, we believe that the table should offer the most common generic assemblies. Floor systems utilizing I-joists have increased from less than 10 percent in 1990 to more than 50 percent. With the increased prevalence of I-joist floor/ceiling assemblies, including this assembly in the table will make the IBC more complete and it will be more useful to code officials. It is also expected that the document will be "user friendly", particularly for designers. In an effort to fulfill this expectation, we propose this common assembly for incorporation into Table 720.1(3). It is supported by ASTM E-119 test results as shown on the attached page. The following information and test results are provided with the understanding that their inclusion does not place them within the copyright release requirements of the signature statement.

Cost Impact: This code change proposal will reduce the cost of construction by an unknown amount.

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

ICCFILENAME: FRANCIS-FS4-TABLE 720.1(3)

FS128–09/10

Table 720.1(3)

Proponent: Sam Francis representing American Forest & Paper Association

Revise as follows:

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

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hr	3 hr	2 hr	1 hr	4 hr	3 hr	2 hr	1 hr
23. Wood I-joist (minimum joist depth 9-1/4" with a minimum flange depth of $1\ ^{5}/_{16}$" and a minimum flange cross-sectional area of ~~2.3~~ 2.25 square inches) at 24" o.c. spacing with ~~1" by 4 inch (nominal)~~ a minimum 1x4 (3/4" x 3.5" actual) ~~wood furring strip spacer~~ ledger strip applied parallel to and covering the bottom of the bottom flange of each member, tacked in place. 2" mineral wool insulation, 3.5 pcf (nominal) installed adjacent to the bottom flange of the I-joist and supported by the ~~1"x4" furring strip spacer~~ 1x4 ledger strip.	23-1.1	½" deep single leg resilient channel 16" on center (channels doubled at wallboard end joints), placed perpendicular to the furring strip and joist and attached to each joist by 1-7/8" Type S drywall screws, 5/8" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered at least 4' and fastened with 1-1/8 Type S drywall screws spaced 7" on center. Wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	5/8
27. Wood I-joist (minimum I-joist depth 9-1/2" with a minimum flange depth of $1\ ^{5}/_{16}$" and a minimum flange cross-sectional area of 1.95 square inches; minimum web thickness of 3/8") @24" o.c.	27-1.1	Minimum 0.019" thick resilient channel 16" o.c. (Channels doubled at wallboard end joints), placed perpendicular to the joists and attached to each joist by ~~1-5/8~~ 1-1/4" Type S drywall screws. Two Layers of ½" Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1-1/4" Type S drywall screws spaced 12" o.c. and the face layer is fastened with 1-5/8" Type S drywall screws spaced 12" o.c. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. Face layer to also be attached to base layer with 1-1/2" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	1

Reason: Editorial corrections to entries in the table.

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

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

ICCFILENAME: FRANCIS-FS3-TABLE 720.1(3)

FS129–09/10
Table 720.1(3)

Proponent: Steve Kuchenski, Architect, Onyx Architects, representing self

Revise as follows:

TABLE 720.1(3)
MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS[a]
(Table remains unchanged)

Notes.

(a-l no change)
m. Double wood floor shall be permitted to be either of the following:
(a) Subfloor of 1-inch nominal tongue-and-groove boarding, a layer of ~~asbestos~~ building paper weighing not less than 14 pounds per 100 square feet and a layer of 1-inch nominal tongue-and-groove finished flooring; or

(Footnotes not shown remain unchanged)

Reason: Asbestos is no longer considered a safe building material.

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

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

ICCFILENAME: KUCHENSKI-FS1-T720.1 (3)

FS130–09/10
721.3.1.5 (New)

Proponent: Richard Porter and Robert Sullivan, cfiFOAM, Inc., representing self

Add new text as follows:

721.3.1.5 Airspaces and cells filled with foamed-in-place foam plastic insulation. The equivalent thickness of concrete masonry completely filled with foamed-in-place foam plastic insulation shall be the average thickness of the solid material in the unit, as contained in Table 721.3.2.

Reason: Amino-plast foamed-in-place foam plastic insulation is often marketed to extend the fire-resistance ratings of concrete masonry walls by up to 2-hrs despite the fact that product literature specifically warns not to use the product against surfaces with sustained temperatures in excess of 190ºF (87ºC).

Sections 721.2.1.2, and 721.2.1.2.2 recognize the contribution of a ≥ 1 inch (≥ 25 mm) thickness of foam plastic insulation sandwiched between two wythes of concrete to such a panel's fire-resistance rating, and that it may be calculated using Equation 7-4. For this calculation, the contribution is 5 minutes; therefore, $R_n^{0.59} = 2.5$. That being the case, the contribution of foam plastic insulation encased within the core cells of either concrete masonry or precast hollow core panel wall assemblies to the fire-resistance rating of such assemblies should be recognized by the code as, at most, only a few minutes.

When the Trenton NJ CBO discovered 3-hr fire-resistance rated UL Design No. U904 walls were built using 2-hr CMU, the proposed cure of the deficiency was injecting foamed-in-place foam plastic insulation into the walls to increase their fire-resistance rating to 3-hrs. Two foam plastic insulation manufacturers claim their foam plastic insulation can increase CMU wall fire-resistance ratings by 2-hrs. Each offers ASTM E-119 test data supporting their claim. In a report submitted to the CBO, a P.E. with extensive masonry experience, stated his professional opinion that "the foam will achieve a 3-hour or greater fire rating." However, the CBO recognized that 1) the test results upon which the P.E. staked his "professional opinion" did not represent UL Design U904, instead 2) they were reports of ASTM E-119 testing of an unlisted CMU wall assembly, and 3) the 2006 IBC does not address how to calculate the fire-resistance rating of a CMU wall assembly injected with foam plastic insulation. Thus, the CBO had no choice but to challenge the claim which, in turn, led to new ASTM E-119 testing that failed at 1 hour 58 minutes 45 seconds. The testing laboratory's engineer concluded 1) "The data indicate that the wall assembly did not meet the requirements for a 2-hour rating." and 2) "The addition of Core-Fill 500 [the trade name of the foam plastic insulation] did not improve the rating of the assembly tested." Additionally, the above expert P.E. reversed his earlier "professional opinion" to conclude separately: 1) "For the Core-Fill 500 to achieve a four-hour fire rating with an 8-inch or 12-inch CMU [wall], the CMU would have to be specially manufactured to produce results similar to what is written in their literature. By specially manufactured we mean that the face shell or percent solid was greater than 'standard' or a special aggregate was used such as 100% pumice" and 2) "Further, inspecting the cores of the demolished panel showed the Core-Fill to have disintegrated."

The claim that foam plastic insulation extends fire-resistance ratings is patently ludicrous and places life & fire safety at increased risk whenever architects and/or building & fire officials accept the claim. ICC board member Barbara Koffron is well aware of this problem. As the Fire Marshal of Phoenix, AZ she has informed other Arizona code enforcement officials by letter and personal contact that foam plastic insulation does not increase the fire-resistance rating of CMU wall assemblies.

In the interest of life and fire safety, the ICC is urged to add the proposed language to the code as a guide to architects and building & fire officials faced with similar life & fire safety dilemmas. The code should specifically acknowledge the minimal contribution made by foam plastic insulation to fire-resistance ratings. Furthermore, the ICC should seek development of an NFPA 259 linked equivalent thickness method to calculate the fire-resistance rating of concrete masonry and/or hollow precast concrete panel wall assemblies so that fire-resistance rating test reports offered in support of claims made by plastic foam insulation manufacturers are acknowledged and fully understood in their proper context. The ICC is urged to add the proposed language to the code to provide clear guidance to architects and building & fire officials faced with similar dilemmas.

Bibliography of Substantiating Information:

Miscellaneous documents:

Letter dated 3/20/2002 from Barbara Koffron, Phoenix, AZ.
Koffron's bio and opinion confirmed.
Letter dated 4/13/2009 from Virginia SFM Ed Altizer, P.E.
Email from former BOAF Executive Director Robert McCormick.
FM Global Property Loss Prevention Data Sheet 1-22 page 3.
Report of testing per UL 263 (ASTM E-119) dated 3/13/1987 of an 8" CMU wall assembly containing plastic foam (polystyrene) inserts.
Report of testing by CTC per ASTM E-119-83 dated 3/25/1986 (excerpt).

Documentation of the complete failure of injected foam plastic insulation to increase the fire-resistance rating of CMU walls in Trenton, NJ.

Memo dated 12/19/2000 notifying GC of possible work stoppage.
Letter with attachment dated 12/22/2000 listing deficiency re: U.L. Design No. U904 compliance.
Notice of Violation dated 12/22/2000.
Biographical sketches of the principals of TSE, an engineering firm retained for the masonry contractor.
Professional opinion of the P.E. dated 1/25/2001 re: result of proposed cure previously rejected by the CBO.
Engineering Evaluation by SwRI dated 5/3/2001 includes comments re: failed results of ASTM E-119-00 testing (SwRI Project No. 01.04019.01.312a) of the masonry contractor's proposed cure.
Project Status by SwRI dated 5/7/2001 outlining results of successful testing of the alternate cure ultimately approved by the CBO.
Report by TSE principal dated 6/13/2002 re: ASTM E-119-00 testing of the proposed cure stating the TSE principal's ***revised*** professional opinion.
Notice of auction sale of the masonry contractor's assets 6/24/2008.

cfiFOAM, Inc. fire-resistance rating information:

Advisory sheet summarizing the Trenton, NJ incident.
"Caveats are Placed on ASTM E-119 Test Reports for Good Reasons".
Product Information Sheet dated 9/2007
IMI Detail 19.101 revised 12/13/2008 illustrating properly injected generic foamed-in-place masonry foam insulation.

Polymaster® fire-resistance rating information:

Report of testing by CTC per ASTM E-119-88 dated 10/18/1994.
R-501® brochure page 4.

Thermal Corporation of America fire-resistance rating claims:

Thermco™ brochure.
Thermco™ product data sheet.
Thermco™ Spec Data sheet.
Thermco™ Guide Specification.
BIA/Stark County, OH flyer (excerpt).
Eco-Smart, Inc. power point presentation (excerpt).
SwRI Project No. 01-1205-312 (excerpt) dated 9/1998 per ASTM E-119-95.

Tailored Chemical Products, Inc. fire-resistance rating claims:

Core-Fill 500® brochure dated 2001.
Cerny & Ivey #20374 dated 11/9/2000
Cerny & Ivey #28008 dated 1/9/2008
SwRI Project No. 01-5920-305 (excerpt) dated 3/1994.
SwRI Project No. 01-7522-607 (excerpt) dated 10/1996.
Jim Griffith/SwRI letter dated 11/4/1996.
Dale Jolley/GA SFM staff letter dated 10/4/1996.
TF of FL letterhead dated 7/21/2003
James Robertson/TN Dir. Codes Enforcement letter dated 1/9/1996.
Al Hancock/TN Ass't. Dir. Codes Enforcement letter dated 5/26/2009.
Submittal for CDBG project funds (excerpt) – Miami-Dade County, FL.

Examples of fire-resistance rating claims based upon injected plastic foam in CMU walls downloaded from web sites:

London Bay Homes – FL.
Arburton Homes, Inc. – FL.
Marlin Bay Yacht Club Residences – FL.
2922 Bellwind Circle Viera FL 32955 – FL.
SureBlock Company of Northfield, IL exports to the Republic of China.

Examples of architectural notes and specifications requiring passing and/or attaining 4-hour fire-resistance rating for CMU walls based, in part, upon injecting plastic foam insulation:

STONEYBROOK 6K RETAIL, Winter Haven, FL.
L.A. Fitness – Lake Worth, FL.
New Weight Room for SE Louisiana University, Hammond, LA.
Echols County K-8 Facility – GA.
Project No. 08-149 – Unknown location.
Arkansas Valley Fairgrounds Event Center
East Germantown Fire Station – PA.
Orlando Fire Station 1 – FL.
Walgreens – Criteria Specification – February 2007 – US.
Audubon Crossing Phase 2 – NJ.

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

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

ICCFILENAME: PORTER-SULLIVAN-FS2-721.3.1.5

FS131–09/10
Table 721.6.2(1)

Proponent: Joe Holland or Dave Bueche, Hoover Treated Wood Products, representing Hoover Treated Wood Products

Revise as follows:

TABLE 721.6.2(1)
TIME ASSIGNED TO WALLBOARD MEMBRANES[a,b,c,d]

DESCRIPTION OF FINISH	TIME[e] (minutes)
3/8-inch wood structural panel bonded with exterior glue	5
15/32-inch wood structural panel bonded with exterior glue	10
19/32-inch wood structural panel bonded with exterior glue	15
3/8-inch gypsum wallboard	10
1/2-inch gypsum wallboard	15
5/8-inch gypsum wallboard	30
1/2-inch Type X gypsum wallboard	25
5/8-inch Type X gypsum wallboard	40
Double 3/8-inch gypsum wallboard	25
1/2- + 3/8-inch gypsum wallboard	35
Double 1/2-inch gypsum wallboard	40

For SI: 1 inch = 25.4 mm.

a. These values apply only when membranes are installed on framing members which are spaced 16 inches o.c. or less

(Footnotes not shown, remain unchanged)

Reason: Correlate Note a in Table 721.6.2(1) to note a in Table 721.6.2(2). The critical spacing is not greater than16 inches. A spacing of less than 16 inches will give more support to the wallboard membrane.

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

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

ICCFILENAME: Holland-Bueche-FS2-T721.6.2(1)

FS132–09/10
721.6.2.3

Proponent: Eirene Oliphant, MCP, Building Official, representing Metropolitan Kansas City Chapter of the ICC; Rick Thornberry, PE, The Code Consortium, Inc., representing California Fire Safety Advisory Council (CFSAC)

Revise as follows:

721.6.2.3 Exterior Walls. For an exterior wall with a fire separation distance greater than ~~5 feet (1524 mm)~~ 10 feet (3048 mm), the wall is assigned a rating dependant on the interior membrane and the framing as described in Tables 721.6.2(1) and 721.6.2(2). The membrane on the outside of the nonfire-exposed side of exterior walls with a fire separation distance greater than ~~5 feet (1524 mm)~~ 10 feet (3048 mm) may consist of sheathing, sheathing paper and siding as described in Table 721.6.2(3).

Reason:
(Oliphant)-This change is to provide consistent language between this section and Section 705.5. The issue is dealing with the exterior walls and the fact that the 2009 code changed Section 705.5 so the wall was rated from both sides if it had 10 feet or less fire separation distance. The 2000 to 2006 codes said that once you got past 5 feet that you only needed to rate the interior side. Code change FS16-07/08 was approved in the last round and it changed the 5 foot requirement to 10 feet in Section 705.5. Section 721.6.2.3 (dealing with calculated fire resistance for exterior walls) did not change the 5 foot dimension. The apparent conflict means that people have to decide whether you use 705.5 as the most restrictive or use 721.6.2.3 as the specific. Section 721.6.2.3 should mirror 705.5
(Thornberry)- This is a correlative code change that makes Section 721.6.2.3 consistent with Section 705.5 which was revised during the last code development cycle based on Code Change FS16-07/08. This simply changes the 5 foot separation distance to 10 feet as required for exterior walls for determining their fire-resistance ratings based on testing from both sides when the fire separation distance is not greater than 10 feet.

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

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

ICCFILENAME: Oliphant- Thornberry-FS1-721.6.2.3

FS133–09/10
708.14, 801.4, 2303.3

Proponent: Joe Holland or Dave Bueche, Hoover Treated Wood Products, representing Hoover Treated Wood Products

THIS IS A 2 PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE AS 2 SEPARATE CODE CHANGES.

PART I – IBC FIRE SAFETY

Add new text as follows:

801.3 Fire retardant paints and coating. Fire retardant paints and coating applied to wood products shall be permitted in accordance with this chapter for interior finish when there is a change of occupancy. Paints and coatings shall comply with NFPA 703 and be maintained in accordance with the International Fire Code.

(Renumber subsequent sections)

PART II – IBC STRUCTURAL

Add new text as follows:

2303.3 Fire retardant paints and coating. Fire retardant paints and coating applied to wood products shall be permitted in accordance with Chapter 8. Paints and coatings shall comply with NFPA 703 and be maintained in accordance with the International Fire Code.

(Renumber subsequent sections)

Reason: To correlate the IBC with the IFC and IEBC. This proposal incorporates the provisions currently contained in the IFC and IEBC. Both of these documents are concerned with structures after being occupancy. The IBC does govern existing buildings when there is a change of occupancy, Chapter 34. There is concern with this class of product being used in inappropriate applications in new construction.
Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: Standard NFPA 703 is currently referenced in the I-codes.

PART I – IBC FIRE SAFETY

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

PART II – IBC STRUCTURAL

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

ICCFILENAME: HOLLAND-BUESHE-FS1-801.1.1.3; S2-2303.3

FS134–09/10
801.9

Proponent: Bob Eugene, representing Underwriters Laboratories Inc

Add new text as follows:

801.9 Labeling and identification. Materials or its packaging required by this chapter to be tested in accordance with ASTM E84 or UL 723 shall bear the label of an approved agency showing the manufacturer's name, product listing, product identification, the flame spread index, and the smoke-developed index.

Reason: Identifying the ratings of interior finish materials can be difficult to determine in the field, especially if the packaging containing certification and ratings is not provided. The proposed requirements are intended to address this situation, and are based on the requirements included in section 2603.2. Only listing and labeling of a product can verify that the product installed at a jobsite is composed of the same material originally tested

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

Analysis: Standards ASTM E84 and UL 723 are currently referenced in the I-codes.

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

ICCFILENAME: EUGENE-FS5-801.9

FS135–09/10
803.11

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

Revise as follows:

803.11 Application of interior finish materials to fire-resistance-rated or noncombustible ~~structural~~ building elements. Where *interior finish* materials are applied on walls, ceilings or structural elements required to have a *fire-resistance rating* or to be of noncombustible construction, they shall comply with the provisions of this section.

803.11.1 Direct attachment and furred construction. Where walls and ceilings are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the *interior finish* material shall be applied directly against such construction or to furring strips not exceeding 1 ¾ inches (44 mm), applied directly against such surfaces.

803.11.1.1 ~~The~~ If the interior finish material is applied to furring strips, the intervening spaces between such furring strips shall comply with one of the following:

1. Be filled with material that is inorganic or noncombustible;
2. Be filled with material that meets the requirements of a Class A material in accordance with Section 803.1.1 or 803.1.2; or
3. Be fireblocked at a maximum of 8 feet (2438 mm) in every ~~any~~ direction in accordance with Section 717

803.11.2 Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.11.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used.

Exceptions:

1. Where ~~except where~~ *interior finish* materials are protected on both sides by an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Where *interior finish* materials are~~, or~~ attached to noncombustible backing or furring strips installed as specified in Section 803.11.1.

803.11.2.1 Hangers and assembly members. The hangers and assembly members of such dropped ceilings that are below the ~~main ceiling line~~ horizontal fire-resistive floor or roof assemblies shall be of noncombustible materials~~, except that in Types III and V construction, *fire-retardant-treated wood* shall be permitted~~. The construction of each set-out wall and horizontal fire-resistive floor or roof assembly shall be of fire-resistance-rated construction as required elsewhere in this code.

Exception: In Types III and V construction, *fire-retardant-treated wood* shall be permitted for use as hangers and assembly members of dropped ceilings.

803.11.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of Type IV construction or to wood furring strips applied directly to the wood decking or planking shall be fireblocked as specified in Section 803.11.1.

803.11.4 Materials. An interior wall or ceiling finish material that is not more than ¼ inch (6.4 mm) thick shall be applied directly onto the wall, ceiling or structural element without the use of furring strips and shall not be suspended away from the building element to which it is applied. ~~against a noncombustible backing.~~

Exceptions:

1. Noncombustible interior finish materials.
2. Materials that meet the requirements of Class A materials in accordance with Sections 803.1.1 or 803.1.2 where the qualifying tests were made with the material ~~suspended or~~ furred out from the noncombustible backing shall be permitted to be used with furring strips.
3. Materials that meet the requirements of Class A materials in accordance with Sections 803.1.1 or 803.1.2 where the qualifying tests were made with the material suspended away from the noncombustible backing shall be permitted to be used suspended away from the building element.

Reason: This section is very unclear and full of run-on sentences. The code proposal only clarifies the intent of the section. In particular it clarifies the issue of thin materials and of the constructions using furring strips or suspended away from the backing. The code proposal does not change the present code requirements.

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

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

ICCFILENAME: HIRSCHLER-FS7-803.11

FS136–09/10
803.12; IFC 803.8

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

THIS IS A 2 PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE AS 2 SEPARATE CODE CHANGES.

PART I – IBC FIRE SAFETY

Revise as follows:

803.12 High Density Polyethylene (HDPE) and Polypropylene (PP). Where high density polyethylene or polypropylene is used as an interior finish it shall comply with Section 803.1.2.

PART II – IFC

803.8 High Density Polyethylene (HDPE) and Polypropylene (PP). Where high density polyethylene or polypropylene is used as an interior finish it shall comply with Section 803.1.2.

Reason: Polypropylene interior finish materials need to be treated the same way as polyethylene interior finish materials, because polypropylene and polyethylene behave in a very similar fashion in fires.

In proposal FS 165 in the last cycle, James Lathrop explained the problems associated with polyethylene (HDPE), when it is used as an interior finish material, as follows (exact quote):

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

Jim Lathrop also explained (FS 166) that HDPE was extensively used in toilet room privacy partitions.

It is worth putting the data Jim Lathrop presented into perspective by noting that pass/fail criteria are 800 kW and that those materials which perform well in the room-corner test usually exhibit heat release rates less than 400 kW, as opposed to over 1700 kW for HDPE.

The materials in Table 1 (attached) were tested in a room corner test and in the Steiner tunnel test (ASTM E 84). Most materials were tested in the NFPA room corner tests but some were tested in the much more severe ISO 9705 room corner test (where the ignition burner is at 100 kW for 10 min and then at 300 kW for a further 10 min, as opposed to 40 kW/150 kW or 40 kW/160 kW for NFPA room-corner tests). Even here, some materials perform with low peak heat release rates.

Table 1: Steiner tunnel and room corner test data

FSI ASTM E 84	Pk RHR (kW) Room Corner Test (NFPA 286)	FSI ASTM E 84	Pk RHR (kW) Room Corner Test (NFPA 265)
15	195	Old Textile Wall Covering Data (1986)	
27	359	Cases Where E 84 is Poor Predictor	
10	40	25	684
70	1460	15	5771
15	128	15	928
15	153	25	1166
0	40		
0	35	Cases Where E 84 Is not a Poor Predictor	
15	22	15	310
28	120	15	182
25	106	15	297
200	930	25	249
200	945	25	309
200	1070		
200	1075		
25	125		
< 25	234		
< 25	1733		

ASTM E 84	Room Corner Test (ISO 9705)	(Jim Lathrop Data on HDPE) Room Corner Test Comments (ISO 9705)
22	120	(walls and ceiling)
< 25	54	(ceiling only)
< 25	160	(ceiling only)
< 25	154	(walls and ceiling)
22	20 @ 10 min – 548 @ 11 min	(walls and ceiling)
22	110	(ceiling only)
< 25	517	(walls and ceiling)
< 25	58	(ceiling only)

Experience in the past has long shown that materials with FSI values of less than 25 when tested in accordance with ASTM E 84, particularly if they are thermally thin materials or materials that melt and drip during the test (such as HDPE or polypropylene) cannot be guaranteed to be safe enough to be permitted to be used based simply on ASTM E 84 testing.

Apparently some manufacturers have figured out that they can address the letter of the code but not the spirit. A new product has now become available in the market: polypropylene toilet room privacy partitions.

Polypropylene is a material that is very similar to polyethylene. Polypropylene is also a thermoplastic polyolefin material, just like polyethylene and there is almost no difference in fire performance. Both materials melt and drip and cause flaming drips when they burn and release large amounts of heat. The consequence of this is that pool fires are formed on the floor beneath the material. Table 2 shows cone calorimeter (ASTM E 1354) data for polypropylene and polyethylene. These materials

Table 2 – Cone calorimeter test data for
standard polypropylene and polyethylene materials – 6 mm, 0.25 inch, thick (1992)

	PP	PE	Average of Plastics (*)
Pk HRR @ 20 kW/m^2 (in kW/m^2)	1,170	913	295
Pk HRR @ 40 kW/m^2 (in kW/m^2)	1,509	1,408	443
Pk HRR @ 70 kW/m^2 (in kW/m^2)	2,421	2,735	640
Total Heat Released @ 20 kW/m^2 (in MJ/m^2)	231	162	92
Total Heat Released @ 40 kW/m^2 (in MJ/m^2)	207	221	126
Total Heat Released @ 70 kW/m^2 (in MJ/m^2)	231	228	131

*: based on cone calorimeter study of 35 materials, published in:
"Heat Release in Fires" by V. Babrauskas and S.J. Grayson – Elsevier, 1992.

The photograph above shows a 3 mm (1/8 inch) thick sheet of polypropylene exposed to fire and the resulting pool fire (Photo and quotes below from NIST Technical Note 1493, T.J. Ohlemiller and J.R. Shields, "Aspects of the Thermal Behavior of Thermoplastic Materials", 2008).

In the above work, NIST tests were conducted with thin sheets of polypropylene and revealed the problems associated with the generation of melt pool fires and the role of a pool fire in the overall fire growth process. The publication states that the results showed the following: "Thermoplastic materials yield extra complexity when they burn in the context of the products in which they are found. Under the influence of gravity, the liquid phase formed during thermal degradation flows downward. If, as is typical, this liquid is burning, then it extends the flaming zone on the solid downward onto whatever surfaces are available to catch the liquid (ultimately a horizontal floor or ground surface). This constitutes, at the least, a new form of flame spread on the object containing the thermoplastic (in addition to normal forms of flame spread over solid surfaces, which are typically fastest in the upward direction), extending the area of fuel that is burning and thereby increasing the overall heat release rate from the object. In many cases this downward flow of flaming liquid results in a pool fire under the object. If that pool fire is close enough to the object that its plume reaches the object, the result can be a self feeding pool fire that further enhances the rate of heat release from the burning system. In addition to this penchant for liquid-assisted flame spread, thermoplastic materials also tend to deform significantly as they burn. Thus large changes in the geometric shape of the burning object are common. These two aspects of thermoplastics make modeling fire growth on them, or on objects containing them, extraordinarily difficult."

With regard to the polypropylene sheet experiment described in the photograph the report states: "The pool fire is centered near the rear edge of the sample, not under the leading edge of the flames on the sheet. This is because it is being fed flaming polymer melt most rapidly from an area several centimeters behind the forward-most portion of the sample flame front where the shape of the trailing edge of the sheet curves rapidly from near vertical toward the horizontal. There is a flow separation region there that tends to dump nearly all of the melt flow accumulated from higher up on the trailing edge of the sheet. From this flow impingement area on the catch surface, the melt tends to flow radially at first. That portion of the melt that is going forward (in the direction of flame spread) under the leading edge of the flames on the base of the sheet encounters a cold catch surface that extracts heat from the melt, lowers its temperature and rapidly raises its viscosity. This nearly halts the flow in this direction, which, in fact, greatly slows the potential rate of fire spread. Because much of the "forward" flow of melt is inhibited and, because the catch surface in the opposite direction has been pre-heated by the pool fire in its march forward, there is a preferential melt flow backward, away from the direction of fire spread and toward the rear end of the pool fire. This tends to somewhat disengage the pool fire from the overall forward fire spread process. The melt flow on the catch surface appears to be driven by the small hydrostatic head that develops due to the finite thickness of the melt layer on this horizontal surface. Near the foot of the pool fire flames, the flow is also driven outward, away from the pool fire center, by the surface tension gradient that is large in this region. (One can often see a step up in melt layer thickness beneath the flame foot.) Note that the region of the pool directly beneath the flames is bubbling, indicating in-depth generation of gaseous degradation products from the polymer melt. Also note that, on the left (just to the left of the flame foot), the pool fire has burned out by locally consuming all of the melt, leaving a dry central area. Around this area, however, there is a substantial amount of melt that has not burned and is left by the fire. Evidently, this residue has cooled sufficiently (and remains sufficiently heat-sunk to the catch surface) that it will not allow flame spread onto its surface (in effect, its temperature cannot be raised to the point where it will ignite). Note that the polymer sheet itself is somewhat wavy on its rear edge (warped out of the plane defined by the cold portion of the sample sheet). This is a consequence of the heat induced softening (and, perhaps, expansion) of the sheet before it actually begins to melt and flow at an appreciable rate. This aspect of the sample behavior was not reproducible. It interacts with the location of the separation point on the rear edge of the sample and thus influences where the bulk of the melt gets deposited in relation to the leading edge of the fire on the base of the sample. This appeared to be a major source of scatter in the evolution of the heat release rate from the fire, as described further below. The above processes could conceivably produce an essentially steady-state, propagating fire after some initial transient. Interestingly, while the flame spread rate along the bottom edge of the sample sheet is nearly steady in all cases, other aspects of the fire, including the heat release rate, are not steady."

It needs to be pointed out that this is not an indictment of all polypropylene materials. It is possible to prepare polypropylene materials that exhibit excellent fire performance, including no significant flaming when tested in the ASTM E 84, Steiner tunnel. When one non fire retarded polypropylene material (1.5 mm, 0.06 inch thick) was subjected to a small open flame screening test, it ignited, dripped a flaming stream of plastic to

the floor and continued to burn on the floor until it was consumed on the specimen holder and on the floor. On the other hand, a fire retarded polypropylene material (3 mm, 1/8 inch thick) was subjected to the same small open flame screening test and caused no flaming drips. When it was then subjected to the ASTM E 84 test, it produced a flame spread index of 50 and a smoke developed index of 215, without flaming drips. Table 3 shows some cone calorimeter results on nine fire retarded polypropylene materials, which gave very adequate fire performance.

Table 3 - Cone Calorimeter Tests on Fire Retarded Polypropylene Specimens (3 mm, 1/8 inch, thick)

	Tests at 20 kW/m^2	Tests at 40 kW/m^2
Material	Pk HRR	Pk HRR
	kW/m^2	kW/m^2
FR PP 1	236	243
FR PP 2	168	206
FR PP 3	207	209
FR PP 4	195	206
FR PP 5	301	231
FR PP 6	215	193
FR PP 7	228	193
FR PP 8	207	188
FR PP 9	202	172
PP Car HVAC duct	480 (at 25 kW/m^2)	

Cost Impact: The code change proposal will increase the cost of construction. NFPA 286 is a more expensive test than is ASTM E 84. However it yields data that can be usable for fire hazard assessment while ASTM E 84 does not. Moreover, the test arrangement is more representative of how an interior finish product is used since the room is lined with the product in the NFPA 286 (room-corner) test.

PART I- IBC FIRE SAFTEY

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

PART II- IFC

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

ICCFILENAME: HIRSCHLER-FS1-803.12.doc

FS137–09/10
804.4.1, Chapter 35

Proponent: Marcelo M. Hirschler, GBH International

1. Revise as follows:

804.4.1 Minimum critical radiant flux. Interior floor finish and floor covering materials in exit enclosures, exit passageways and corridors shall not be less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I- 4, M, R-1, R-2 and S. In all areas, floor covering materials shall comply with the DOC FF-1 Apill test@ (CPSC 16 CFR, Part 1630) or with ASTM D 2859.

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required, and materials complying with DOC FF-1 Apill test@ (CPSC 16 CFR, Part 1630) or with ASTM D 2859 are permitted in any area where Class II materials are required.

2. Add new standard to Chapter 35 as follows:

ASTM D 2859-06 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials

Reason: In this proposal only one change is being made to the IBC wording, as follows. There are two versions of the "pill test": the US federal government, through CPSC, regulates all carpets and rugs based on 16 CFR 1630 since the 1970s. However, the IBC is an international code and ASTM D 2859 is an equivalent test to 16 CFR 1630 and is included as an alternate. In fact, it is ASTM D 2859 that complies with the ICC policy on referenced standards.

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

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM D 2589-06, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: HIRSCHLER-FS4-804.4.1.doc

FS138–09/10
804.4

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

Revise as follows:

804.4 Interior floor finish requirements. Interior floor covering materials shall comply with Sections 804.4.1 and 804.4.2 and interior floor finish materials shall comply with Section 804.4.2. ~~In all occupancies, interior floor finish and floor covering materials in exit enclosures, exit passageways, corridors and rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux as specified in Section 804.4.1.~~

~~**804.4.1 Minimum critical radiant flux.** Interior floor finish and floor covering materials in exit enclosures, exit passageways and corridors shall not be less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I- 4, M, R-1, R-2 and S. In all areas, floor covering materials shall comply with the DOC FF-1 Apill test@ (CPSC 16 CFR, Part 1630).~~

804.4.1 Pill test. In all occupancies, interior floor covering materials shall comply with the requirements of the DOC FF-1 Apill test@ (CPSC 16 CFR, Part 1630).

804.4.2 Minimum critical radiant flux. In all occupancies, interior floor finish and floor covering materials in exit enclosures, exit passageways, corridors and rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall not be less than Class I in Groups I-1, I-2 and I-3 and not less than Class II in Groups A, B, E, H, I- 4, M, R-1, R-2 and S.

> **Exception:** Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required and materials complying with DOC FF-1 Apill test@ (CPSC 16 CFR, Part 1630)are permitted in any area where Class II materials are required.

Reason: In this proposal two changes have been made to the IBC wording:

1. The "pill test" is applied to all carpets and carpet-like floor finish materials, in view of the fact that the federal government, through CPSC, regulates all carpets and rugs based on 16 CFR 1630 since the 1970s. Note that traditional finish floors and floor coverings, such as wood flooring and resilient floor coverings, have not proved to present an unusual hazard and are known to pass the "pill test" and are exempted by the exception in 804.1.
2. In the IBC there is confusion because section 804.4 states that "interior floor finish and floor covering materials in exit enclosures, exit passageways, corridors and rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux" and then section 804.4.1 states that "interior floor finish and floor covering materials in exit enclosures, exit passageways and corridors shall not be ...". This leaves undefined what minimum critical radiant flux is required for "interior floor finish and floor covering materials in rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling". Since section 804.2 only distinguishes two classes for NFPA 253, the logical conclusion is that the words are missing and that these rooms or spaces have to meet the same requirements as the corridors from which they are not separated.

Note that the exception to 804.1 already exempts all floor finishes and floor coverings that are not comprised of fibers. Therefore this entire section applies basically only to textile floor coverings, such as carpets.

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

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

ICCFILENAME: HIRSCHLER-FS11-804.4

FS139–09/10
809 (New)

Proponent: Joe McELvaney, representing himself

Add new Section as follows:

Section 809
Children's Playground Structures

809.1 Children's playground structures. Structures intended as children's playgrounds that exceed 10 feet (3048 mm) in height and 150 square feet (14 m2) in area shall comply with Sections 809.1.1 through 809.1.4.

809.1.1 Materials. Children's playground structures shall be constructed of noncombustible materials or of combustible materials that comply with the following:

1. Fire-retardant-treated wood complying with Section 2302.
2. Light-transmitting plastics complying with Section 2606.
3. Foam plastics (including the pipe foam used in soft-contained play equipment structures) having a maximum heat-release rate not greater than 100 kilowatts when tested in accordance with UL 1975.
4. Aluminum composite material (ACM) meeting the requirements of Class A interior finish in accordance with Chapter 8 when tested as an assembly in the maximum thickness intended for use.
5. Textiles and films complying with the flame propagation performance criteria contained in NFPA 701.
6. Plastic materials used to construct rigid components of soft-contained play equipment structures (such as tubes, windows, panels, junction boxes, pipes, slides and decks) exhibiting a peak rate of heat release not exceeding 400 kW/m^2 when tested in accordance with ASTM E 1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation at a thickness of 6 mm.
7. Ball pool balls, used in soft-contained play equipment structures, having a maximum heat-release rate not greater than 100 kilowatts when tested in accordance with UL 1975. The minimum specimen test size shall be 36 inches by 36 inches (914mmby 914 mm) by an average of 21 inches (533 mm) deep, and the balls shall be held in a box constructed of galvanized steel poultry netting wire mesh.
8. Foam plastics shall be covered by a fabric, coating or film meeting the flame propagation performance criteria of NFPA 701.
9. The floor covering placed under the children's playground structure shall exhibit a Class I interior floor finish classification, as described in Section 804, when tested in accordance with NFPA 253.

809.1.2 Fire protection. Children's playground structures located within the compartment shall be provided with the same level of approved fire suppression and detection devices required for similar structures in the same compartment.

809.1.3 Separation. Children's playground structures shall have a minimum horizontal separation from other structures of 20 feet (6090 mm).

809.1.4 Area limits. Children's playground structures shall not exceed 300 square feet (28 m^2) in area, unless a special investigation has demonstrated adequate fire safety.

Reason: The current 2009 IBC has a section 402.12 for children's playground structures. This section currently only applies to Malls. However children's playground equipment can be found in all types of buildings and not just in malls. This new section will allow the code official to enforce these rules in any building that chooses to have children's playground equipment.

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

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

ICCFILENAME: MCELVANEY-FS1-809 NEW.doc

FS140–09/10
1403.2; R703.1.1

Proponent: Theresa Weston, PhD., DuPont Building Innovations representing DuPont Building Innovations

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise as follows:

1403.2 Weather protection. Exterior walls shall provide the building with a weather-resistant *exterior wall envelope*. The *exterior wall envelope* shall include flashing, as described in Section 1405.4. The *exterior wall envelope* shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a durable and continuous *water-resistive barrier* behind the exterior veneer, as described in Section 1404.2, and a means for draining water that enters the assembly to the exterior. Protection against condensation in the *exterior wall* assembly shall be provided in accordance with Section 1405.3.

Exceptions:

(Exceptions remain unchanged)

PART II – IRC BUILDING/ENERGY

Revise as follows:

R703.1.1 Water resistance. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a durable and continuous water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section R601.3 of this code.

Exceptions:

(Exceptions remain unchanged)

Reason: Durability and continuity are critical to the performance of water-resistive barriers within a wall system, therefore they should be qualities that are referenced in the code. For example, one investigation of building failures[1] reported the following causes for water breacyhing the water-resistive barrier:

-32% At flashing and penetrations
-30% Discontinuities
-14% No exterior sheathing paper
-11% Material degradation
-10% No or reverse lap
-3% Other

Enhanced durability and continuity would have accounted for the majority of the issues found in this study. The proposed usage is compatible with current code language as “durability” and “continuity” are concepts referenced throughout the code.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: WESTON-FS1-1403.2

FS141–09/10
1401, 1403.2, 1405.2, 1405.17

Proponent: Joseph Lstiburek, Building Science Corporation, representing self

Revise as follows:

1401 DEFINITIONS

~~**EXTERIOR WALL ENVELOPE**~~ **WALL ENCLOSURE.** A system or assembly of *exterior wall* components, including *exterior wall* finish materials, that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space, from the detrimental effects of the exterior environment.

1403.2 Weather protection. ~~Exterior walls shall provide the building with a weather-resistant *exterior wall envelope*. The *exterior wall envelope* shall include flashing, as described in Section 1405.4. The *exterior wall envelope*~~ The wall enclosure shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a *water-resistive barrier* behind the exterior veneer, as described in Section 1404.2, and a means for draining water that enters the assembly to the exterior. The wall enclosure shall include flashing as required in Section 1405.4. Protection against condensation in the *exterior wall* assembly shall be provided in accordance with Section 1405.3.

Exceptions:

1. ~~A weather-resistant *exterior wall envelope* shall not be required over concrete~~ Concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1404.2 and 1405.4, shall not be required for a wall enclosure ~~an *exterior wall envelope*~~ that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
   2.1. ~~*Exterior wall envelope*~~ Wall enclosure test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
   2.2. ~~*Exterior wall envelope*~~ Wall enclosure test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
   2.3. ~~*Exterior wall envelope*~~ Wall enclosure assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (psf) (0.297 kN/m2).
   2.4. ~~*Exterior wall envelope*~~ Wall enclosure assemblies shall be subjected to a minimum test exposure duration of 2 hours.

   The ~~*Exterior wall envelope*~~ Wall enclosure design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the *exterior wall* envelope, joints at the perimeter of openings or intersections of terminations with dissimilar materials.

3. Exterior insulation and finish systems (EIFS) complying with Section 1408.4.1.

TABLE 1405.2
MINIMUM THICKNESS OF WEATHER COVERINGS

WALL COVERING AND CLADDING TYPE	**MINIMUM THICKNESS (inches)**

(Portions of table not shown remain unchanged)

SECTION 1405
INSTALLATION OF WALL COVERINGS AND CLADDINGS

1405.2 Weather protection. *Exterior walls* shall provide weather protection for the building. The materials of the minimum nominal thickness specified in Table 1405.2 shall be acceptable as *approved* ~~weather~~ wall coverings and claddings

1405.17 Fastening. ~~Weather~~ Wall coverings ~~boarding~~ and claddings ~~wall coverings~~ shall be securely fastened with aluminum, copper, zinc, zinc-coated or other *approved* corrosion-resistant fasteners in accordance with the nailing schedule in Table 2304.9.1 or the *approved* manufacturer's installation instructions. Shingles and other ~~weather~~ wall coverings and claddings shall be attached with appropriate standard- shingle nails to furring strips securely nailed to

studs, or with *approved* mechanically bonding nails, except where sheathing is of wood not less than 1-inch (25 mm) nominal thickness or of wood structural panels as specified in Table 2308.9.3(3).

Reason: The current language of the building code is inconsistent with terms in the engineering, scientific, technical, educational, building science and "common use" communities. In fact terms and language within the code itself are inconsistently used. "Codespeak" makes it difficult to communicate appropriate requirements and concepts. The I-Codes are likely the most effective educational documents used in the construction industry. It behooves us to use the language in them correctly. If you don't call "things" by their proper names how can you expect users of the documents to execute the actions correctly. The changes proposed in this code change do not change the intent of any of the sections nor do they change any specific requirement they only fix bad terms and language and bad physics.

Cost Impact: This proposal will not raise the cost of construction.

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

ICCFILENAME: LSTIBUREK-FS1-1402

FS142–09/10
1403.5 (NEW)

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing The Extruded Polystyrene Foam Association

Add new text as follows:

1403.5 Vertical and Lateral Flame Propagation. Exterior walls greater than 20 feet (6 096 mm) in height above grade plane that contain combustible exterior wall coverings shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

Exceptions:

1. Exterior walls of Type V construction
2. Exterior walls that contain as the only combustible material, one or more of the following components:
   1. Thermal- and sound-insulating materials that meet the requirements of Section 1406.2.2.
   2. Architectural trim and embellishments.
   3. Combustible exterior wall veneers installed to heights not exceeding 40 ft. above grade plane.

(Renumber subsequent numbers)

Reason: This new section is proposed to address the potential vertical and lateral flame spread that can occur either on or within exterior wall assemblies that contain combustible materials.

Newer construction practices such as the addition of combustible weather resistant barriers allow significant amounts of combustible materials/products (other than foam plastics) to be installed on or in exterior walls. This code change proposal adds the requirement for NFPA 285 testing for exterior walls that contain these types of combustible materials. This requirement is already in place for any exterior walls that contain foam plastic insulation or use MCM exterior veneers.

Testing has shown that when a combustible weather resistive barrier was added to an exterior wall system that had successfully met the criteria for NFPA 285, that the addition of the barrier caused failure to occur in the NFPA 285 test.

Small-scale testing has shown that these types of materials can provide significant amounts of combustible fuel loading to a wall assembly and they are not currently regulated by the Code.

With the advent of newer exterior wall technologies such as “rainscreen” systems, the openings in the exterior veneer will allow flames and or heat to readily impact and ignite the barrier material. Due to the built-in standoffs of these systems, the barrier materials could then exhibit significant vertical or lateral flame propagation.

The Code proposal requires the NFPA 285 testing for exterior walls on Types I, II, III, or IV construction since these types of construction allow either none or limited combustibles in the exterior walls. The 20 ft. height limit provides a safety margin on the height of wall that can use these materials without testing. Also, while the code allows combustible exterior wall covering up to 40 ft., this proposal has as a limit 20 ft. since these materials can provide a hidden or concealed fire situation.

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

Analysis: Standard NFPA 285 is currently referenced in the I-codes.

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

ICCFILENAME: BEITEL-FS1-1403.5.doc

FS143–09/10
1404.12 (New)

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

1. Add a new definition as follows:

SECTION 1402
DEFINITIONS

Polypropylene siding - a shaped material, made principally from polypropylene homopolymer, or copolymer, which in some cases may contain fillers and/or reinforcements, that is used to clad exterior walls of buildings.

2. Add new section as follows

1404.12 Polypropylene siding. Polypropylene siding shall be certified and labeled as conforming to the requirements of 1404.12.1, 1404.12.2 or 1404.12.3 by an approved quality control agency. Polypropylene siding shall be installed in accordance with the manufacturer's installation instructions.

1404.12.1 Flame Spread Index. The polypropylene siding material shall comply with the requirements of ASTM D 7254. The certification shall be accompanied by a test report stating that all portions of the test specimen ahead of the flame front remained in position during the test in accordance with ASTM E 84 or UL 723.

1404.12.2 Heat Release. The polypropylene siding material shall comply with the requirements of ASTM D 7254 and a 4 foot by 8 foot (1.22 x 2.44 m) section of the polypropylene siding material shall exhibit a peak rate of heat release not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source at the thickness intended for use.

1404.12.3 Fire Separation Distance. The polypropylene siding shall comply with all the requirements of ASTM D 7254 and the fire separation distance between a building with polypropylene siding and the adjacent building shall be no less than 10 feet (3.05 m).

1405.18 Polypropylene siding. Polypropylene siding conforming to the requirements of this section and complying with 1404.12 shall be permitted on exterior walls of buildings of Type V construction located in areas where the basic wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1405.18.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform with the water-resistive barrier requirements in Section 1403. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall have a minimum 0.313-inch (7.9 mm) head diameter and 0.125-inch (3.18 mm) shank diameter. The nails shall be corrosion resistant and shall be long enough to penetrate the studs or nailing strip at least 0.75 inch (19 mm). Where the siding is installed horizontally, the fastener spacing shall not exceed 16 inches (406 mm) horizontally and 12 inches (305 mm) vertically. Where the siding is installed vertically, the fastener spacing shall not exceed 12 inches (305 mm) horizontally and 12 inches (305 mm) vertically.

3. Add new standards to Chapter 35 as follows:

ASTM D 7254-07	Standard specification for polypropylene (PP) siding,
NFPA 289-09	Standard Method of Fire Test for Individual Fuel Packages

Reason: Polypropylene siding is being used in construction now although the IBC does not permit it. Therefore, it is important to regulate the use of polypropylene siding in a way that it can be used safely. The new sections are similar to the existing sections on vinyl siding, except for the fire testing. Vinyl siding is known to have adequate fire performance since the siding needs to be made of rigid (unplasticized) PVC in accordance with ASTM D 3679. Polypropylene is known not to have adequate fire performance unless properly fire retarded.

A new standard specification has been issued for polypropylene siding, ASTM D 7254. The specification addresses many of the key requirements for the material. Unfortunately the fire test requirement in ASTM D 7254 is not explicit enough. ASTM D 7254 does not require that, when fire testing is conducted in the ASTM E 84 (Steiner tunnel), the test specimen must remain in place during the test and flaming drips and falling test specimens are not allowed to happen. This requirement is critical for materials that are used exposed so that the flame spread index assesses actual surface flame spread on the material surface. The standards committee responsible for the ASTM E 84 fire test (ASTM E05) decided that this issue should be addressed in the code rather than in the standard itself. Polypropylene that has not been appropriately fire retarded will release abundant amount of heat, much more than other combustible sidings permitted by the code, such as wood siding or vinyl (PVC) siding, and spread

fire through flaming drips. Such flaming drips will contribute to ignite mulch and debris found near the building and spread the fire. Table 1 shows such results.

Recent fire tests were also conducted in the Steiner tunnel, ASTM E 84, on a rigid PVC material 0.06 in. thick; it exhibited a flame spread index of 10. Under the same test conditions, a fire retarded polypropylene material 0.15 in. thick exhibited a flame spread index of 50. These are both very adequate values, in view of the fact that both the polypropylene material and the PVC material remained in place during the ASTM E 84 test and did not generate flaming drips.

Table 1: Results of Steiner Tunnel Tests (ASTM E 84)

Material	Flame Spread Index	Maximum Flame Front Advance (ft)	Time to Max. Flame Front Advance (min:s)	Flaming on Floor (Duration) (min:s)
PVC	10	4.6	7:48	None
FR Polypropylene	50	19.5	6:24	4:18

This shows that it is possible to use fire retarded polypropylene materials that give very adequate flame spread values and also very adequate heat release values, without flaming drips. Consequently, polypropylene siding should only be used when it is shown to exhibit the appropriate fire performance.

When polypropylene siding material (which does not have the appropriate fire performance) is tested in ASTM E 84 (Steiner tunnel) the test specimen will often fall ahead of the arrival of the flame giving incorrect results.

Table 2 shows new results of cone calorimeter heat release tests with polypropylene and PVC:

Table 2: Results of Cone Calorimeter (ASTM E 1354) Tests

Material	Peak Heat Release Rate	Total Heat Released	Time to Ignition	Effective Heat of Combustion	Fire Performance Index
	kW/m^2	MJ/m^2	s	MJ/kg	$s\ m^2/kW$
PVC	186.8	16.7	36	9.2	0.19
Non FR Polypropylene	768.3	47.2	23	40.3	0.03

Table 3 shows some earlier results with polypropylene, PVC and wood materials in the cone calorimeter:

Table 3 - Cone Calorimeter Data on Plastics and Douglas Fir

Material	Pk HRR (kW/m^2)	THR (MJ/m^2)	TTI (s)	EHC (MJ/kg)	FPI ($s\ m^2/kW$)
		Flux 20 kW/m^2			
PVC Rigid, Custom Inj. Mold.	40	3.0	5159	1.4	1343
PVC Rigid, Extrusion	102	2.9	3591	7.3	31.4
PP Non FR	1170	231.3	218	72.0	0.19
PP FR	236		382	23.6	1.62
PE Non FR	913	161.9	403	41.1	0.44
XLPE FR	88	87.6	750	22.4	8.08
Douglas Fir	237	46.5	254	13.1	1.10
		Flux 40 kW/m^2			
PVC Rigid, Custom Inj. Mold.	175	24.3	73	5.1	0.42
PVC Rigid, Extrusion	183	90.8	85	13.3	0.46
PP Non FR	1509	206.9	86	42.1	0.06
PP FR	243		80	23.9	0.33
PE Non FR	1408	221.0	159	46.6	0.06
XLPE FR	192	126.2	105	24.2	0.55
Douglas Fir	221	64.1	34	17.6	0.15
		Flux 70 kW/m^2			
PVC Rigid, Custom Inj. Mold.	191	93.0	45	12.7	0.24
PVC Rigid, Extrusion	190	96.5	48	10.8	0.25
PP Non FR	2421	231.1	41	43.1	0.02
PE Non FR	2735	227.5	47	42.6	0.02
XLPE FR	268	129.2	35	24.7	0.13
Douglas Fir	196	50.0	12	13.5	0.06

Table 3 shows that, when tested in the cone calorimeter, ASTM E 1354, under the same conditions, it was found that non fire retarded polypropylene exhibits a peak heat release rate of 1509 kW/m^2, while a non fire retarded PVC material exhibits a peak heat release rate of 183 kW/m^2, and a Douglas fir material exhibits a peak heat release rate of 221 kW/m^2. Such a very high heat release rate is unacceptable for a siding

material. Testing in the cone calorimeter, including the testing above, is normally conducted in the horizontal orientation with radiant heat exposing the test specimen from above, thus capturing any flaming drips and assessing their effects.

Table 4 shows that wood materials, when not fire retarded, will usually exhibit flame spread index values that are less than 200 and will correspond to Class B or Class C categories. At the same time rigid PVC (vinyl) materials will generally exhibit flame spread index values less than 25. Neither wood nor PVC materials will cause flaming drips or molten material burning on the ground.

Table 4. Steiner tunnel (ASTM E 84) Data for Wood and Vinyl Materials

Material/Product	Flame Spread Index		Material/Product	Flame Spread Index	
	Low	High		Low	High
Cellulose fiberboard ceiling tile	70	80	Ponderosa pine B	105	170
Cottonwood	115		Poplar	170	185
Cypress	145	150	Red Gum	140	155
Douglas fir	70	100	Red oak flakeboard	70	190
Douglas fir overlay	110	140	Red Oak Flooring	100	100
Douglas fir/cedar plywood	190	230	Red Pine	140	
Eastern White Pine	85		Redwood	65	70
Hemlock/cedar plywood	190		Southern yellow pine	130	195
Lauan hardwood	150	170	Vinyl faced plywood	110	130
Lodgepole Pine	95		Vinyl profile	15	20
Maple flooring	105		Vinyl Siding	10	15
Northern white pine A	190	215	Vinyl vapor barrier	10	15
Northern white pine B	120	180	Walnut	130	140
Pacific silver fir	70		West Coast Hemlock	60	70
Pacific Yellow Cedar	80		Western Red Cedar	70	
Particleboard	135	180	Western spruce	100	
Plywood paneling over gypsum	130	150	Western white pine	75	
Ponderosa pine A	170	230	Yellow birch	105	110

Figure 1 shows char from a PVC siding fire (no foam backing): the material softened, charred and burned but is still substantially intact. Figure 2 shows a vertical PP sheet melting and resulting in flaming drips on the floor.

The reason that heat release rate and floor flaming are important issues is because it has been shown that the heat radiated by siding is a major contributor to the ignition of neighboring houses, as is the spread of fire along the ground, particularly when there are loose combustibles present.

That is the reason that the third option allows polypropylene siding to be used, but with a larger separation distance, when the results of the ASTM E 84/UL 723 (Steiner tunnel) test are based on a test specimen that is not self supporting and falls to the floor of the tunnel during the test. The standard ASTM E 84 states: "1.4 Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place." Therefore valid test results require the test specimen to stay in place ahead of the exposing flame.

Polypropylene siding should not be used in buildings other than Type V construction.

Figure 1 – remains of vinyl siding fire

Figure 2 Polypropylene siding melting and flaming on the floor.
(No figure 2 attached)

NFPA 289 was developed to test individual fuel packages and is similar in concept to UL 1975, already widely used in the code.

Cost Impact The code does not at present allow the use of polypropylene siding. In order to safely use polypropylene siding construction costs would have to increase either by using materials that would meet test requirements for adequate fire safety or by increasing fire separation distances.

Analysis: Code change proposal FS143 and FS144 address new requirements for polypropylene siding. The committee needs to make its intent clear with respect to these provisions. A review of the standard(s) proposed for inclusion in the code, ASTM D 7254-07 and NFPA 289-09, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: HIRSCHLER-FS6-1404.12.doc

FS144–09/10

1402 (New), 1404.8 (New), 1405.13 (New), Chapter 35; IRC R202, 703.13, 703.13.1, Chapter 44

Proponent: Matthew Dobson, representing Vinyl Siding Institute

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTTIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Add new text as follows:

1402 DEFINITIONS

Polypropylene Siding. A shaped material made principally from polypropylene that is used to clad exterior walls covering.

2. Add new text as follows:

1404.8 Polypropylene Siding. Polypropylene siding shall conform to the requirements of ASTM D7254.

(Renumber subsequent sections)

3. Add new text as follows:

1405.13 Polypropylene Siding. Polypropylene siding conforming to the requirements of this section and complying with ASTM D7254 shall be permitted on exterior walls of buildings located in areas where the wind speed specified in Chapter 16 does not exceed 100 miles per hours (45m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceed 100 mile per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1405.13.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform with the weather-resistive barrier requirements in Section 1403. Siding and accessories shall be installed in accordance with approved manufacturer's instructions.

(Renumber subsequent sections)

4. Add new text to Chapter 35 standards as follows:

ASTM D7254 – 07 Standard Specification for Polypropylene (PP) Siding…1402, 1404.8, 1405.13

PART II – IRC BUILDING/ENERGY

1. Add new text as follows:

R202 DEFINITIONS

Polypropylene Siding. A shaped material made principally from polypropylene that is used to clad exterior walls covering.

2. Add new text as follows:

TABLE R703.4
WEATHER–RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL	NOMINAL THICKNESS[a] (inches)	JOINT TREATMENT	Water Resistive Barrier Required	Wood or wood structural panel sheathing	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
(NEW) Polypropylene Siding[X]	Varies	Lap	Yes	0.120 nail (shank) with a .313 head[y,z]	Not allowed[aa,bb]	Not allowed[aa,bb]	Not allowed[aa,bb]	Not allowed	As specified by the manufacturer instructions or test report

(Portions of table and footnotes not shown remain unchanged)

aa. Where the sheathing is applied directly over wood structural panels or other approved backing capable of independently resisting the design wind pressure, the polypropylene siding shall be installed in accordance with the manufacturer's installation instructions.

bb. Where the polypropylene siding manufacturer's product specifications provide an approved design wind pressure rating for installation over fiberboard, gypsum or foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacture's installation instructions.

3. Add new text as follows:

R703.13 Polypropylene Siding. Polypropylene siding shall comply with requirements of ASTM D 7254.

R703.13.1 Installation. Polypropylene siding shall be installed in accordance with the manufacturer's installation instructions.

4. Add new text to Chapter 44 standards as follows:

ASTM D7254 – 07 Standard Specification for Polypropylene (PP) Siding…Table R703.4, R703.13

Reason: The purpose of this change is to assist code officials with the recognition of polypropylene (PP) siding. This product has reached a level of maturity including the establishment of an acceptance criterion through ES and an ASTM product standard. By providing this recognition in the code, building officials will be able to quickly reference the product and installation provisions.

Currently there is confusion in the market place between vinyl siding and PP siding. In many instances the PP siding is thought to be vinyl siding, this new language will help the code official to understand the requirements of the product established by ES and ASTM and what to enforce relative to its installation.

D7254 – 07 Standard Specification for Polypropylene (PP) Siding

The ASTM standard provides all necessary manufacturing tests and specifications to ensure the product meets the intent of the code from safety and welfare to wind performance. Included with this proposal are copies of the acceptance criteria and the ASTM standard D7254.

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

Analysis: Code change proposal FS143 and FS144 address new requirements for polypropylene siding. The committee needs to make its intent clear with respect to these provisions. A review of the standard(s) proposed for inclusion in the code, ASTM D7254-07, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: DOBSON-FS1-1404.8; RB2-202 PART II

FS145–09/10

1402 (New), 1404.13 (New), Table 1405.2, 1405.10.2 (New)

Proponent: Olene Bigelow, representing International Masonry Institute

1. Add new text as follows:

1402 DEFINITIONS

COMPOSITE NATURAL STONE. A veneer consisting of natural stone laminated to, or combined with, other like units to form a larger unit, or to dissimilar materials to form a cladding to be anchored or adhered to an approved substrate.

2. Add new text as follows:

1404.13 Porcelain Tile. Porcelain tile shall conform to the requirements of ANSI 137.1.3 for ceramic tile having an absorption of 0.5% or less according to ANSI 137.4.1 – Class Table and ANSI 137.1.6.1 Allowable Properties by Tile Type – Table 10.

3. Revise as follows:

TABLE 1405.2
MINIMUM THICKNESS OF WEATHER COVERINGS

Covering Type	Minimum Thickness (Inches)
Porcelain Tile	0.25
Composite Natural Stone	0.50

(Portions of table not shown remain unchanged)

4. Add new text as follows:

1405.10.2 Exterior adhered masonry veneers - porcelain tile and composite natural stone. Adhered units shall not exceed 5/8" thickness and a maximum of 24" in any face dimension nor more than 3 square feet in total face area and shall not weigh more than 9 pounds per square foot. Porcelain tile and composite natural stone shall be adhered to an approved backing system.

Reason: There is currently no definition for composite natural stone in the IBC. This proposal would add that definition. Currently, there is no definition for porcelain tile in the IBC. As one of myriad types of ceramic tile, its unique characteristics and extremely low absorption rate requires it be dealt with differently from other materials, especially when applied as an exterior adhered veneer. These materials are relatively new in exterior applications and fall outside the scope of TMS 402/ACI 530/ASCE 6. With no specific code requirements found in IBC, installations of these materials are being found inadequate and some significant failures have occurred. See attached photographs. When these units and/or their adhesion system fail, for whatever ultimate reason, public safety is put at risk.

Here, only a few units have fallen, so far. No mechanical attachment.

Another project: Upon stripping the façade, it appears an attempt was made to “anchor” the units, but it was clearly unsuccessful

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

Analysis: Standards ANSI A137 are currently referenced in the I-codes.

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

ICCFILENAME: BIGELOW-FS1, FS2, FS3, FS4

FS146–09/10

Table 1405.2

Proponent: John Woestman, The Kellen Company, representing the Masonry Veneer Manufacturers Association (MVMA)

Revise as follows:

TABLE 1405.2
MINIMUM THICKNESS OF WEATHER COVERING

OVERING TYPE	MINIMUM THICKNESS (inches)
Precast stone facing	0.625[e]
Stone (cast artificial, anchored)	1.5

e. Includes scratch coat, setting bed, and precast stone.

(Portions of table and footnotes not shown, remain unchanged)

Reason: Table 1405.2 contains several items which have been interpreted as applying to adhered masonry veneer. The proposed revisions to Table 1405.2 attempt to clarify the IBC with a footnote to the table for the precast stone facing. The revisions also clarify that cast artificial stone, with a minimum thickness of 1.5 inches, is an anchored veneer, not an adhered veneer.

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

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

ICCFILENAME: WOESTMAN-FS2-Table 1405.2

FS147–09/10
Table 1405.3; IRC Table R601.3.1

Proponent: Edward L. Keith, PE, APA, The Engineered Wood Association

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Revise as follows:

TABLE 1405.3.1
CLASS III VAPOR RETARDERS

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[a]
Marine 4	~~Vented cladding over OSB~~ ~~Vented cladding over plywood~~ Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≥ .5 over 2x4 wall Insulated sheathing with *R*-value ≥ 3.75 over 2x6 wall
5	~~Vented cladding over OSB~~ ~~Vented cladding over plywood~~ Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≥ 5 over 2x4 wall Insulated sheathing with *R*-value ≥ 7.5 over 2x6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≥ 7.5 over 2x4 wall Insulated sheathing with *R*-value ≥ 11.25 over 2x6 wall
7 and 8	Insulated sheathing with *R*-value ≥ 10 over 2x4 wall Insulated sheathing with *R*-value ≥ 15 over 2x6 wall

For SI: 1 pound per cubic foot = 16 kg/m^3.

a. Spray foam with a minimum density of 2 lb/ft3 applied to the interior cavity side of ~~OSB, plywood~~ wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to meet the insulating sheathing requirement where the spray foam *R*-value meets or exceeds the specified insulating sheathing *R*-value.

PART II – IRC BUILDING/ENERGY

Revise as follows:

TABLE R601.3.1
CLASS III VAPOR RETARDERS

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[a]
Marine 4	~~Vented cladding over OSB~~ ~~Vented cladding over plywood~~ Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≧ 2.5 over 2x4 wall Insulated sheathing with *R*-value ≧ 3.75 over 2x6 wall
5	~~Vented cladding over OSB~~ ~~Vented cladding over plywood~~ Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≧ 5 over 2x4 wall Insulated sheathing with *R*-value ≧ 7.5 over 2x6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Insulated sheathing with *R*-value ≧ 7.5 over 2x4 wall Insulated sheathing with *R*-value ≧ 11.25 over 2x6 wall
7 and 8	Insulated sheathing with *R*-value ≧ 10 over 2x4 wall Insulated sheathing with *R*-value ≧ 15 over 2x6 wall

For SI: 1 pound per cubic foot = 16.02 kg/m3.

a. Spray foam with a minimum density of 2 lb/ft3 applied to the interior cavity side of ~~OSB, plywood~~ wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to meet the insulating sheathing requirement where the spray foam *R*-value meets or exceeds the specified insulating sheathing *R*-value.

Reason:
PART I- The proposed change is made to foster consistency in the code. The IBC and other codes only differentiate between plywood and OSB when there is a difference in performance. In all other cases, in this and the other codes, the generic term "wood structural panel" is used. As there is no difference in performance between plywood, OSB, or composite panels where the use of a Class III vapor retarder is concerned, the term "wood structural panel" is appropriate.

Note that the use of a vapor retarder for wood structural panel products is in line with our long-standing recommendations.

PART II- The proposed change is made to foster consistency in the code. The IRC and other codes only differentiate between plywood and OSB when there is a difference in performance. In all other cases, in this and the other codes, the generic term "wood structural panel" is used. As there is no difference in performance between plywood, OSB, or composite panels where the use of a Class III vapor retarder is concerned, the term "wood structural panel" is appropriate.

Note that the use of a vapor retarder for wood structural panel products is in line with our long-standing recommendations.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: KEITH-FS2-TABLE 1405.3

FS148–09/10
1405.6.2

Proponent: Charles Clark, representing Brick Industry Association-Masonry Alliance for Codes and Standards (MACS)

THIS CODE CHANGE WILL BE HEARD BY THE IBC STRUCTUAL COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THIS COMMITTEE.

Revise as follows:

1405.6 Anchored masonry veneer. Anchored masonry veneer shall comply with the provisions of Sections 1405.6, 1405.7, 1405.8 and 1405.9 and Sections 6.1 and 6.2 of TMS 402/ACI 530/ASCE 5.

1405.6.1 Tolerances. Anchored masonry veneers in accordance with Chapter 14 are not required to meet the tolerances in Article 3.3 F1 of TMS 602/ACI 530.1/ASCE 6.

1405.6.2 Seismic requirements. Anchored masonry veneer located in Seismic Design Category C, D, E or F shall conform to the requirements of Section 6.2.2.10 of TMS 402/ACI 530/ASCE 5. ~~Anchored masonry veneer located in Seismic Design Category D shall also conform to the requirements of Section 6.2.2.10.3.3 of TMS 402/ACI 530/ASCE 5.~~

Reason: This proposed code change addresses anchored masonry veneer constructed on a building located in Seismic Design Category D and removes the requirement to include wire joint reinforcement in the veneer and mechanically attach the reinforcement to the veneer anchors. This proposed change is based on shaking-table testing conducted in January and March 2009 on full-scale structures (one wood-stud frame and one reinforced masonry structure) at The University of California San Diego complemented by prior shaking-table testing and quasi-static testing of wall segments, all with clay masonry veneer. The testing conclusively demonstrated that incorporating wire reinforcement in anchored veneer does not improve the performance or behavior of the anchored masonry veneer during or after the maximum considered earthquake for a structure located in Seismic Design Category D (Bibliography References 1 & 2 below).

The testing was conducted separately on two full-scale specimens: a 20 ft x 20 ft prototypical wood-stud frame structure with anchored brick veneer and a 20 ft x 20 ft prototypical concrete masonry structure with anchored brick veneer. For each specimen, two of the four veneer elevations included joint reinforcement with the remaining two veneer elevations constructed without joint reinforcement. Both specimens were each subjected separately to a seismic load imposed by the Maximum Considered Earthquake (2% probability of exceedance in 50 years) for Seismic Design Category D. In each specimen, no differences in performance or behavior were observed in the veneers with and without joint reinforcement.

Not requiring reinforcement in the veneer will likely decrease the possibility of corrosion occurring in the veneer. By not requiring reinforcement, the extent of metal accessories present in the veneer is substantially lowered thus reducing the probability of corrosion.

As way of background, the Masonry Alliance for Codes and Standards has previously submitted this change as FS179-07/08 based on previous out-of-plane shaking-table testing conducted on wall segments (Bibliography Reference 5 below) as well as analysis (Bibliography References 3 & 4 below) that supported the change. The full-scale entire structure testing program mentioned above was not yet complete. Aware of this program, the IBC Structural Committee disapproved the change citing their preference to "wait until that testing is complete and those results are made available before approving the proposal." That testing has now been completed and has indicated that the requirement to include joint reinforcement in anchored masonry veneer located in Seismic Design Category D is not necessary.

Bibliography:

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2. Klingner, Richard E., "Behavior of Anchored Masonry Veneer with Light Wood Stud-Framing or Masonry Backing in Full-Scale Whole-Building Shaking-Table Tests," *TMS Journal*, The Masonry Society, Boulder, Colorado, June 2009 (date submitted for publication).
3. McEwen, William, Wibowo, A., Adebar, P., Anderson, D., Effect of Veneer Joint Reinforcement on Brick Tie Embedment, *Ninth Canadian Masonry Symposium*, June, 2001.
4. McGinley, M., Bennett, R., Johnson, E., "Effects of Horizontal Joint Reinforcement on the Seismic Behavior of Masonry Veneers," 6th *International Masonry Conference*, November, 2002.
5. Turek, Ventura, "Out-of-Plane Shake-Table Testing of Brick Veneer With and Without Wire Joint Reinforcement," The University of British Columbia, June, 2002.

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

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

ICCFILENAME: CLARK-FS1-1405.6.2

FS149–09/10
1405.7

Proponent: Gary J. Ehrlich, PE, representing National Association of Home Builders

THIS CODE CHANGE WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. SEE THE TENTATIVE HEARING ORDER OF THIS COMMITTEE.

Revise as follows:

1405.7 Stone veneer. Stone veneer units not exceeding 10 inches (254 mm) in thickness shall be anchored directly to masonry, concrete or to stud construction by one of the following methods:

1. *(No change to current text)*
2. With wood stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) corrosion-resistant wire mesh with two layers of water-resistive barrier in accordance with Section 1404.2 shall be applied directly to wood studs spaced a maximum of 16 inches (406 mm) o.c. On studs, the mesh shall be attached with 2-inch-long (51 mm) corrosion-resistant steel wire furring nails at 4 inches (102 mm) o.c. providing a minimum 1.125-inch (29 mm) penetration into each stud and with 8d common nails at 8 inches (203 mm) o.c. into top and bottom plates or with equivalent wire ties. There shall be not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal, looped through the mesh for every 2 square feet (0.2 m2) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that it will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.
3. With cold-formed steel stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) corrosion-resistant wire mesh with two layers of water-resistive barrier in accordance with Section 1404.2 shall be applied directly to steel studs spaced a maximum of 16 inches (406 mm) o.c. The mesh shall be attached with 2-inch-long (51 mm) corrosion-resistant #8 self-drilling, tapping screws at 4 inches (102 mm) o.c. providing a minimum 0.5-inch (12.7 mm) penetration into each stud, and at 8 inches (203 mm) o.c. into top and bottom tracks or with equivalent wire ties. There shall be not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal, looped through the mesh for every 2 square feet (0.2 m2) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that it will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer. The cold-formed steel framing members shall have a minimum uncoated thickness of 0,043 inches (1.09 mm).

Reason: The purpose of this proposal is to provide guidance for stone veneer anchored to cold-formed steel stud backing. The current language only addresses wood studs, leaving attachment to cold-formed steel stud backing as an alternate means and methods. The language mirrors the wood stud language, with appropriate revisions based on ICC-ES stone veneer reports and BIA Technical Note 28B on Brick Veneer/Steel Stud Walls.

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

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

ICCFILENAME: Ehrlich-FS1-1405 7

FS150–09/10
1405.10.2 (New), 1405.10.2.1 (New), 1405.10.2.2 (New), 1405.10.2.3 (New); IRC R703.12.1 (New)

Proponent: John Woestman, The Kellen Company, Representing the Masonry Veneer Manufacturers Association (MVMA)

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Add new text as follows:

1405.10 Adhered masonry veneer. Adhered masonry veneer shall comply with the applicable requirements in Section 1405.10.1 and Sections 6.1 and 6.3 of TMS 402/ACI 530/ASCE 5.

1405.10.1 Interior adhered masonry veneers. Interior adhered masonry veneers shall have a maximum weight of 20 psf (0.958 kg/m2) and shall be installed in accordance with Section 1405.10. Where the interior adhered masonry veneer is supported by wood construction, the supporting members shall be designed to limit deflection to 1/600 of the span of the supporting members.

1405.10.2 Exterior adhered masonry veneer. Exterior adhered masonry veneer shall be in accordance with section 1405.10

1405.10.2.1 Water-resistive barriers. Water-resistive barriers shall be installed as required in Section 1404.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper.

> **Exception:** Where the water-resistive barrier that is applied over wood-based sheathing has a water resistance equal to or greater than that of 60-minute Grade D paper and is separated from the adhered masonry veneer by an intervening, substantially nonwater-absorbing layer or drainage space.

1405.10.2.2 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26 gage galvanized or plastic with a minimum vertical attachment flange of 3 ½ inches (89 mm) shall be installed a minimum of 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section 1405.4 to direct moisture to the exterior. The water-resistive barrier shall lap over the exterior of the attachment flange of the screed or flashing.

1405.10.2.3 Installation. Adhered masonry veneer shall be installed in accordance with the manufacturer's instructions..

PART II – IRC BUILDING/ENERGY

Add new text as follows:

R703.12 Adhered masonry veneer installation. Adhered masonry veneer shall be installed in accordance with the manufacturer's instructions.

R703.12.1 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26 gage galvanized or plastic with a minimum vertical attachment flange of 3 ½ inches (89 mm) shall be installed a minimum of 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section R703.8 to direct moisture to the exterior. The water-resistive barrier, as required by Table R703.4 Footnote w, shall lap over the exterior of the attachment flange of the screed or flashing.

Reason:

PART I-The added section for exterior adhered masonry veneer compliments the existing section for interior adhered masonry veneer.

The proposed language for water-resistive barriers is modeled after similar requirements for stucco (section 2510.6).

The proposed language for flashing at the foundation is similar to the weep screed requirements for stucco and compliments the performance requirements of section 1405.4 Flashing (*Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior* . . . . . .) while at the same time allowing for alternates to the stucco-specific weep screed.

Adhered masonry veneer manufacturers require their products to be installed per their instructions and the building code should support this requirement with enforceable language.

PART II- The proposed language for flashing at the foundation is similar to the weep screed requirements for stucco and compliments the flashing performance requirements of section R703.8 Flashing (*Approved* corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components . . . .) while at the same time allowing for effective alternates to the stucco-specific weep screed.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: WOESTMAN -FS3-1410.2 PART I AND WOESTMAN-RB2-703.12.1 PART II

FS151–09/10

1405.10.2 (New), 1405.2.1 (New); IRC R703.12.1 (New)

Proponent: John Woestman, The Kellen Company, Representing the Masonry Veneer Manufacturers Association (MVMA)

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

PART I – IBC FIRE SAFETY

Add new text as follows:

1405.10 Adhered masonry veneer. Adhered masonry veneer shall comply with the applicable requirements in Section 1405.10.1 and Sections 6.1 and 6.3 of TMS 402/ACI 530/ASCE 5.

1405.10.1 Interior adhered masonry veneers. Interior adhered masonry veneers shall have a maximum weight of 20 psf (0.958 kg/m2) and shall be installed in accordance with Section 1405.10. Where the interior adhered masonry veneer is supported by wood construction, the supporting members shall be designed to limit deflection to 1/600 of the span of the supporting members.

1405.10.2 Exterior adhered masonry veneer. Exterior adhered masonry veneer shall be in accordance with section 1405.10

1405.10.2.1 Clearances. Adhered masonry veneer shall be installed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas or ½ inch (12 mm) above exterior walking surfaces supported by the same foundation which supports the exterior wall.

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

PART II – IRC BUILDING/ENERGY

Add new text as follows:

R703.12 Adhered masonry veneer installation. Adhered masonry veneer shall be installed in accordance with the manufacturer's instructions.

R703.12.1 Clearances. Adhered masonry veneer shall be installed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas or ½ inch (12 mm) above exterior walking surfaces supported by the same foundation which supports the exterior wall.

Reason:

PART I: The added section for exterior adhered masonry veneer compliments the existing section for interior adhered masonry veneer.

The clearance requirements are consistent with stucco applications and go one step further by specifying a minimum of ½" clearance to exterior walking surfaces which are supported by the same foundation that supports the wall to which the exterior veneer is adhered. The proposed requirement that both the wall and the walking surface be supported by the same foundation, along with existing IBC flashing performance requirements of section 1405.4 for exterior wall intersections with porches, decks, balconies, and similar architectural features, limits this ½" clearance to building elements stable to each other and required to be flashed to manage water. This ½" clearance requirement allows for architectural and aesthetic improvements in the installation of adhered masonry veneer.

PART II: The clearance requirements proposed are consistent with stucco applications and go one step further by specifying a minimum of ½" clearance to exterior walking surfaces which are supported by the same foundation that supports the wall to which the exterior veneer is adhered. The proposed requirement that both the wall and the walking surface be supported by the same foundation, along with existing IRC flashing performance requirements of section R703.8 for exterior wall intersections with porches, decks, or stairs, limits this ½" clearance to building elements stable to each other and required to be flashed to manage water. This ½" clearance requirement allows for architectural and aesthetic improvements in the installation of adhered masonry veneer.

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: WOESTMAN -FS4-1410.2 PART I AND WOESTMAN-RB3-R703.12.1 PART II

FS152–09/10
1405.13.2

Proponent: Paul K. Heilstedt, PE, FAIA, Chair, representing ICC Code Technology Committee (CTC)

Revise as follows:

IBC 1405.13.2 Window sills. In Occupancy Groups R-2 and R-3, one- and two-family and multiple-family dwellings, where the opening of the sill portion of an operable window is located more than 72 inches (1829 mm) above the finished grade or other surface below, the lowest part of the clear opening of the window shall be at a height not less than 24 inches (610 mm) above the finished floor surface of the room in which the window is located. Glazing between the floor and a height of 24 inches (610 mm) shall be fixed or have openings through which a 4-inch (102 mm) diameter sphere cannot pass through.

Exception: Openings that are more than 75 feet above grade that are provided with window ~~guards~~ fall prevention devices that comply with ASTM F 2006 ~~or F 2090.~~

Reason: The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: http://www.iccsafe.org/cs/cc/ctc/index.html. Since its inception in April/2005, the CTC has held seventeen meetings - all open to the public.

This proposed change is a result of the CTC's investigation of the area of study entitled "Child Window Safety". The scope of the activity is noted as:

Study the incidence and mechanisms of falls from open windows by children and to investigate the necessity and suitability of potential safeguards and/or revisions to the current codes.

In a related change, both the IBC and IRC are proposed to be updated to allow the use of window opening control devices to abate the hazard of child falls through windows. These devices can be used for buildings of any height and are regulated by updated standard ASTM F2090 – 2008.

The scope of ASTM F 2006 – 00 (2005) entitled "Standard Safety Specification for Window Fall Prevention Devices for Non-Emergency Escape (Egress) and Rescue (Ingress) Windows" is noted in Section 1.2 of the standard which states; "This safety specification applies only to window fall prevention devices that are to be used on windows that are not intended for escape (egress) and rescue (ingress)." Further, Section 1.3 states that: " This safety specification applies only to devices intended to be applied to windows installed at heights of more than 75 above ground level in multiple family dwelling buildings. This safety specification is not intended to apply to windows below 75 feet because all windows below 75 feet that are operable could be used as a possible secondary means of escape."

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

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

ICCFILENAME: HEILSTEDT-FS2-1405.13.2

FS153–09/10
1405.13.2, 1405.13.2.1, Chapter 35

Proponent: Julie Ruth, PE, J Ruth Code Consulting, representing the American Architectural Manufacturers Association Window Opening Control Device Task Group

1. Revise as follows:

1405.13.2 Window sills. In Occupancy Groups R-2 and R-3, one- and two-family and multiple-family dwellings, where the opening of the sill portion of an operable window is located more than 72 inches (1829 mm) above the finished grade or other surface below, the lowest part of the clear opening of the window shall be at a height not less than 24 inches (610 mm) above the finished floor surface of the room in which the window is located. Glazing between the floor and a height of 24 inches (610 mm) shall be fixed or have openings through which a 4-inch (102 mm) diameter sphere cannot pass.

Exceptions:

1. Openings that are provided with window guards that comply with ASTM F 2006 or F 2090.
2. Windows that are provided with window opening control devices that comply with Section 1405.13.2.1.

1405.13.2.1 Window opening control devices. When required elsewhere in this code, window opening control devices shall comply with the provisions of AAMA 909.

2. Revise Chapter 35 as follows:

AAMA
AAMA 909 Voluntary Specification for Window Opening Control Devices….. 1405.13.2.1

Reason: The 2009 IRC permits an exception to the current minimum sill height requirement of Section R612.3 for windows that are provided with window opening limiting devices. For consistency with the IRC, the IBC should permit the same. The criteria for these devices within the IRC, however, is inadequate. The 2008 edition of ASTM F2090 attempts to provide greater guidance, but the members of the AAMA Window Opening Control Device task group, which was created specifically to respond to this new requirement in the International Codes, have found inconsistencies and confusion within ASTM F2090-08 as well. Therefore, the members of the AAMA WOCD TG have committed of the development and completion of an AAMA standard in time for the 2012 International Residential Code in late 2010.

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

Analysis: A review of the standard(s) proposed for inclusion in the code, AAMA-909, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: Ruth-FS2-1405.13.2

FS154–09/10
1013.1 (New), 1405.13.2

Proponent: Daniel E. Nichols, PE, New York State Div. of Code Enforcement and Administration

1. Add new text as follows:

1013.1 General. Guards and operable windows shall comply with this section. Guards shall comply with the provisions of Sections 1013.2 through 1013.7. Operable windows with sills located more than 72 inches above finished grade or other surface below shall comply with Section 1013.8.

(Renumber subsequent sections)

2. Relocate Section 1405.13.2 to new Section 1013.8 as follows:

~~**1405.13.2**~~ **1013.8 Window Sills**. In Occupancy Groups R-2 and R-3, one – and two-family and multiple-family dwellings, where the opening of the sill portion of an operable window is located more than 72 inches above the finished grade or other surface below, the lowest part of the clear opening of the window shall be at a height not less than 24 inches above the finished floor surface of the room in which the window is located. Glazing between the floor and a height of 24 inches shall be fixed or have openings through which a 4-inch diameter sphere cannot pass.

Exception: Openings that are provided with window guards that comply with ASTM F2006 or F2090.

Reason: The reason for Section 1405.13.2 is essentially a protection from fall requirement. That is the same reason that 1013 exists. Having this section located in Chapter 14 results in it being frequently overlooked by designers and building officials alike. Section 1013.1 is modified to scope the section to include fall protection requirements from windows.

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

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

ICCFILENAME: NICHOLS-FS1-1405.13.2

FS155–09/10
1406.2.1; IRC R302.1.2 (New)

Proponent: Michael Love, representing Metropolitan Washington DC Fire Marshal's Committee

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC Fire Safety

Revise as follows:

1406.2.1 Ignition resistance. Combustible exterior wall coverings shall be tested in accordance with NFPA 268.

Exceptions:

1. Wood or wood-based products.
2. Other combustible materials covered with an exterior covering other than vinyl sidings listed in Table 1405.2.
3. Aluminum having a minimum thickness of 0.019 inch (0.48mm).
4. Exterior wall coverings on exterior walls of Type V construction.

1406.2.1.1 Fire separation 5 feet or less. Where installed on exterior walls having a fire separation distance of 5 feet (1524 mm) or less <u>to buildings, structures or decks</u>, combustible exterior wall coverings shall not exhibit sustained flaming as defined in NFPA 268.

<u>Exceptions:</u>

1. <u>Decks constructed of fire retardant treated wood</u>
2. <u>Exterior balconies and decks protected by automatic sprinklers as provided for in Section 903.3.1.2.1</u>

1406.2.1.2 Fire separation greater than 5 feet. For fire separation distances greater than 5 feet (1524 mm) <u>to buildings, structures or decks</u>, an assembly shall be permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the assembly shall be determined from Table1406.2.1.2 based on the maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the assembly.

<u>Exceptions:</u>

1. <u>Decks constructed of fire retardant treated wood</u>
2. <u>Exterior balconies and decks protected by automatic sprinklers as provided for in Section 903.3.1.2.1</u>

PART II – IRC Building/Energy

Add new text as follows:

R302.1 Exterior walls. Construction, projections, openings and penetrations of *exterior walls* of *dwellings* and accessory buildings shall comply with Table R302.1.

Exceptions:

1. Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the *fire separation distance*.
2. Walls of *dwellings* and *accessory structures* located on the same *lot*.
3. Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the *lot*. Projections beyond the *exterior wall* shall not extend over the *lot line*.
4. Detached garages accessory to a *dwelling* located within 2 feet (610 mm) of a *lot line* are permitted to have roof eave projections not exceeding 4 inches (102 mm).

5. Foundation vents installed in compliance with this code are permitted.

R302.1.2. Combustible Exterior Walls and Combustible Decks . Combustible exterior wall coverings and sheathing that are ignitable below 12.5 KW/m^2 and exhibit sustained flaming shall not be used where installed on exterior walls having a fire separation distance of 5 feet (1524 mm) to combustible decks or balconies.

Exception: Decks constructed of fire retardant treated wood

Reason:
Part I- A technical change is needed to Section 1406 relating to the lack of fire resistance of the exterior surface of exterior combustible walls when directly exposed to combustible decks. It is likely that code development did not consider the need to require fire resistance for the exterior wall from these structures but there is a growing concern for the number of fires that start on and under combustible decks which when ignited burn fiercely.

This code change proposal is not intended to address all fires that could present an exposure to combustible exterior walls. It focuses on the higher risk and increased likelihood for a fire involving a combustible deck that is directly attached or within five feet of the combustible exterior wall. Since decks would have a limited exposure to a building any additional expenditure for more fire resistant materials is reduced. Ultimately a sheathing of gypsum even in thin layers increases the resistance.

1406.2.1.1 and 1406.2.1.1 both add the same language to include proximity to buildings, structures or decks and allows an exception for decks constructed of fire retardant wood.

This code change proposal is not intended to address all fires that could present an exposure to combustible exterior walls. It focuses on the higher risk and increased likelihood for a fire involving a combustible deck that is directly attached to or within five feet of the combustible exterior wall. Since decks would have a limited exposure to a building any additional expenditure for more fire resistant materials is reduced. Ultimately a sheathing of gypsum even in thin layers increases the resistance.

These fires are rarely extinguished before it has spread into the void of the exterior combustible wall or up the exterior surface of the walls and into the attic. While the most frequent facing surface of the exterior wall is vinyl siding this is listed in specs as non-combustible. There is experience that indicates no effective resistance to fire though as the siding readily melts away to allow fire access to the substrate sheathing which most often is a combustible material such as Oriented Strand Board (OSB), low density fiber board and Rigid Foam Insulation. These common materials are combustible but OSB resists direct flame longer then rigid foam insulation. Tests conducted by the National Institute for Standards and Technology showed that when a plume of heated gases and flame impinges on a combustible exterior wall it will ignite the combustible exterior wall that is within five feet. This scenario may actually be less dramatic then a well advanced fire involving an attached deck which could preheat the combustible wall and directly expose it to a vertical flame. This exposure and create a more intense flame spread vertically on the wall. Some materials used as a substrate to the exterior siding will resist fire more then others; some materials readily spread fire vertically directly to the roof along the exterior surface; into a non-fire resistant soffit then into the attic, or destroys the integrity of the substrate material and the enters the wall void.

Decks have become more like exterior rooms with furniture, outdoor kitchens and primarily the presence of people. Barbecue grills, lighting and the inappropriate disposal of smoking materials are all hazards that have been the causes of fires that first ignite decks then spread easily to and into the structure of a home or similar building. Once ignited decks burn violently with direct flame and radiant heat exposure to combustible exterior walls. The fact that the fuel in a deck is open on all sides which enhances oxidization for complete combustion and ample direct flame as well as preheating from radiant heat make them a perfect primary fire source to feed fires that most often spread to and involve the roof and attic of homes. The direct flaming attack on these walls cause nearly immediate destruction of combustible and easily degraded sidings to allow immediate access and exposure to the interior structure. Due to the unique flow of the heat and gases from the deck fires into the structure these fires most often result in near total loss of structure. In the Washington D.C Metro area these fires have resulted in many fires one incident which killed a firefighter and another fire incident that severely burned multiple firefighters.

Part II- Add a new section to IRC Chapter 3 as R302.1.2 to increase fire resistance of combustible exterior walls when directly exposed to combustible decks. It is likely that the code development process did not consider the need to require fire resistance for the exterior wall from decks but there is a growing concern for the number of fires that start on and under combustible decks which when ignited burn fiercely. IRC considers exposure buildings in regard to fire spread but does not include the hazard of combustible deck fires. While IRC has some limited passive fire resistance of residential construction through use of fire blocking and compartmentation it does not recognize the hazard of a deck involved in fire to the structure of the main building through the exterior facing of the wall.

This code change proposal is not intended to address all fires that could present an exposure to combustible exterior walls. It focuses on the higher risk and increased likelihood for a fire involving a combustible deck that is directly attached to or within five feet of the combustible exterior wall. Since decks would have a limited exposure to a building any additional expenditure for more fire resistant materials is reduced. Ultimately a sheathing of gypsum even in thin layers increases the resistance.

These fires are rarely extinguished before it has spread into the void of the exterior combustible wall or up the exterior surface of the walls and into the attic. While the most frequent facing surface of the exterior wall is vinyl siding this is listed in specs as non-combustible. There is experience that indicates no effective resistance to fire though as the siding readily melts away to allow fire access to the substrate sheathing which most often is a combustible material such as Oriented Strand Board (OSB), low density fiber board and Rigid Foam Insulation. These common materials are combustible but OSB resists direct flame longer then rigid foam insulation. Tests conducted by the National Institute for Standards and Technology showed that when a plume of heated gases and flame impinges on a combustible exterior wall it will ignite the combustible exterior wall that is within five feet. This scenario may actually be less dramatic then a well advanced fire involving an attached deck which could preheat the combustible wall and directly expose it to a vertical flame. This exposure and create a more intense flame spread vertically on the wall. Some materials used as a substrate to the exterior siding will resist fire more then others; some materials readily spread fire vertically directly to the roof along the exterior surface; into a non-fire resistant soffit then into the attic, or destroys the integrity of the substrate material and the enters the wall void.

Decks have become more like exterior rooms with furniture, outdoor kitchens and primarily the presence of people. Barbecue grills, lighting and the inappropriate disposal of smoking materials are all hazards that have been the causes of fires that first ignite decks then spread easily to and into the structure of a home or similar building. Once ignited decks burn violently with direct flame and radiant heat exposure to combustible exterior walls. The fact that the fuel in a deck is open on all sides which enhances oxidization for complete combustion and ample direct flame as well as preheating from radiant heat make them a perfect primary fire source to feed fires that most often spread to and involve the roof and attic of homes. The direct flaming attack on these walls cause nearly immediate destruction of combustible and easily degraded sidings to allow immediate access and exposure to the interior structure. Due to the unique flow of the heat and gases from the deck fires into the structure these fires most often result in near total loss of structure. In the Washington D.C Metro area these fires have resulted in many fires one incident which killed a firefighter and another fire incident that severely burned multiple firefighters.

Cost Impact: Part I & II- Product information indicates that a product such as a gypsum-based exterior sheathing is comparable to other sheathing and is more resistant to fire.

Part I – IBC FIRE SAFETY

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

Part II – IRC BUILDING/ENERGY

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

ICCFILENAME: LOVE-FS1-1406.2.1.1-RB-1-R302.1.2

FS156–09/10

1404.12, 1405.2, 1405.18 (New), 1405.18.1 (New), Table 1405.18.1 (New), 1405.18.2 (New), 1405.18.2.1 (New), Table 1405.18.2.1 (New), 1405.18.2.2 (New), Table 1405.18.2.2 (New), 1405.14.1, 1405.14.2 (New), 1405.14.2.1 (New), 1405.14.2.2 (New), 1405.14.2.3 (New), 2304.6; IRC R703.3 (New), R703.3.1 (New), Table R703.3.1 (New), R703.3.2 (New), R703.3.2.1 (New), Table R703.3.2.1 (New), R703.3.2.2 (New), Table R703.3.2.2 (New), R703.4, Table R703.4, R703.5.1, R703.6.1, R703.7.4.1, R703.11.2, R703.11.2.1, R703.11.2.2, R703.11.2.3

Proponent: Jay H. Crandell, PE, d/b/a ARES Consulting, representing the Foam Sheathing Coalition

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARI8NG ORDERS FOR THESE COMMITTEES.

PART I – IBC STRUCTURAL

1. Add new text as follows:

1404.12 Foam plastic sheathing. Foam plastic sheathing shall comply with requirements for foam plastic insulation in Section 2603. When used as a water-resistive barrier, the foam plastic sheathing material and installation shall be approved in accordance with Section 1404.2.

2. Revise as follows:

1405.2 Weather protection. *Exterior walls* shall provide weather protection for the building. The materials of the minimum nominal thickness specified in Table 1405.2 shall be acceptable as *approved* weather coverings. Foam plastic sheathing used in exterior wall covering assemblies with approved exterior weather coverings shall comply with Section 1405.18.

3. Add new text as follows:

1405.18 Foam plastic sheathing. Foam plastic sheathing used in exterior wall covering assemblies shall comply with this section, Section 2603, Chapter 13, and the foam sheathing manufacturer's approved installation instructions.

1405.18.1 Minimum thickness. The thickness of foam plastic sheathing shall comply with Table 1405.18.1.

> **Exception:** Where foam plastic sheathing is applied directly over or behind wall sheathing or other solid substrate capable of separately resisting the required wind pressure, the limitations of Table 1405.18.1 shall not apply.

TABLE 1405.18.1
REQUIREMENTS FOR FOAM PLASTIC SHEATHING
IN EXTERIOR WALL COVERING ASSEMBLIES[1,2]

Foam Plastic Sheathing Material[3]	Foam Sheathing Thickness (in)[3]	Maximum Wind Speed (mph) – Exposure B[4]			
		Walls with Interior Finish[5]		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
Siding Attached Directly Over Foam Plastic Sheathing per Section 1405.18.2.1					
EPS	¾"	110	NP	90	NP
	1"	130	100	125	NP
	≥1-1/2"	130	130	130	125
Polyiso-cyanurate	½" (faced)	130	90	115	NP
	¾" (faced)	130	120	130	100
	1" (faced)	130	130	130	110
	≥1-1/2" (faced)	130	130	130	115
XPS	½" (faced)	125	85	105	NP
	¾"	110	NP	90	NP
	1"	130	95	120	NP
	≥1-1/2"	130	130	130	115
Siding Offset from Foam Sheathing per Section 1405.18.2.2					
EPS	¾"	95	NP	NP	NP
	1"	125	85	105	NP
	≥1-1/2"	130	130	130	105
Polyiso-cyanurate	½" (faced)	120	NP	100	NP
	¾" (faced)	130	100	130	85
	1" (faced)	130	110	130	95
	≥1-1/2" (faced)	130	120	130	100
XPS	½" (faced)	110	NP	90	NP
	¾"	95	NP	NP	NP
	1"	125	85	105	NP
	≥1-1/2"	130	120	130	100

For SI: 1 inch = 25.4 mm, 1 mile per hour = 1.609 km/h

NP = not permitted

1. Tabulated maximum wind speed values are based on a mean roof height of 30-feet (9.1 m). Multiply maximum wind speed by 0.95 for a mean roof height of 45 feet (13.7 m) or 0.9 for a mean roof height of 60 feet (18.3 m). For greater mean roof heights, an approved design shall be required.
2. Foam plastic sheathing panels shall be permitted to be oriented parallel or perpendicular to framing members.
3. Foam plastic sheathing shall meet or exceed the following material standards: Expanded Polystyrene (EPS) – ASTM C578 (Type II, min.1.35 lb/ft^3 density), Polyisocyanurate – ASTM C1289 (Type 1, min.), and extruded polystyrene (XPS) – ASTM C578 (Type X, min. 1.30 lb/ft^3 density). Where a "faced" product is indicated, a facer shall be provided on both faces of the foam plastic sheathing. Where facing is not indicated in the table, faced and unfaced foam plastic sheathing shall be permitted. For all foam plastic sheathing products, approved manufacturer data shall be permitted in lieu of the table requirements.
4. Multiply tabulated maximum wind speed by 0.85 for wind exposure C or by 0.78 for wind exposure D.
5. Interior finish shall be minimum 1/2-inch (12.7 mm) thick gypsum wall board or an approved product with equivalent or greater out-of-plane bending strength and stiffness.

1405.18.2 Siding attachment over foam sheathing. Siding shall be attached over foam sheathing in accordance with Section 1405.18.2.1, Section 1405.18.2.2, or an approved design. In no case shall the siding material be used in a manner that exceeds its application limits.

Exception: Where the siding manufacturer has provided approved installation instructions for application over foam sheathing, those requirements shall apply.

1405.18.2.1 Direct siding attachment. Approved weather coverings installed directly over foam sheathing without separation by an air space shall comply with Table 1405.18.2.1 in regard to nail diameter, penetration, and nail spacing for the applicable foam sheathing thickness and wind speed condition. The siding fastener and siding installation shall otherwise comply with Chapter 14.

Exceptions:

1. For adhered masonry veneer, refer to Section 1405.10
2. For vinyl siding, refer to Section 1405.14.
3. For exterior insulation and finish systems, refer to Section 1408.

TABLE 1405.18.2.1
FASTENING REQUIREMENTS FOR DIRECT SIDING ATTACHMENT OVER FOAM PLASTIC SHEATHING[1,2]

Minimum Nail Diameter[3] (inches)	Nail Spacing along Stud[4] (inches)	Maximum Foam Sheathing Thickness[5] (inches)	16"oc WALL FRAMING Maximum Wind Speed (mph)			24"oc WALL FRAMING Maximum Wind Speed (mph)		
			Exposure B	Exposure C	Exposure D	Exposure B	Exposure C	Exposure D
0.113	6	2	140	120	110	120	100	90
	8	2	130	110	100	100	85	DR
	12	1	100	85	DR	85	DR	DR
0.120	6	3	140	120	110	120	100	90
	8	2	130	110	100	110	90	85
	12	1.5	110	90	85	90	DR	DR
0.135	6	3	140	120	110	130	110	100
	8	3	140	120	110	110	90	85
	12	2	110	90	85	90	DR	DR

For SI: 1 inch = 25.4 mm; 1 mph = 1.609 km/h
DR = design required

1. Maximum wind speed values are based on a minimum 1-1/4 inch (31.8 mm) penetration of a smooth shank nail fastener into wood framing of Spruce-Pine-Fir or any wood species with a specific gravity of 0.42 or greater in accordance with AFPA/NDS.
2. Tabulated maximum wind speed values are based on a mean roof height of 30-feet (9.1 m). Multiply maximum wind speed by 0.95 for a mean roof height of 45 feet (13.7 m) or 0.9 for a mean roof height of 60 feet (18.3 m). For greater mean roof heights, an approved design shall be required.
3. Nail fasteners shall comply with ASTM F1667, except nail length shall be permitted to exceed ASTM F1667 standard lengths to provide a minimum 1-1/4 inch (31.8 mm) penetration into wood framing. Specified nails in accordance with Chapter 1405 or the siding manufacturer's approved installation instructions shall meet all other requirements in ASTM F1667 or be otherwise approved for the intended application.
4. 'Nail spacing along stud' refers to spacing of siding fasteners in the vertical direction. A minimum of one fastener shall be applied at each intersection of an individual siding member with a wall stud.
5. Maximum foam sheathing thickness values are based on a maximum 24-inch (0.6 m) stud spacing, a maximum siding dead load of 11 psf (0.53 kPa), and S_{DS} per Section 1613.5.4 not exceeding 0.83g. Siding dead load shall not exceed 8 psf (0.39 kPa) for and S_{DS} of 1.17g, 6 psf (0.29 kPa) for S_{DS} of 1.5g, or 3.0 psf (0.14 kPa) for S_{DS} of 3.0 g.

1405.18.2.2 Offset siding attachment. When an airspace separates the siding from direct contact with the foam plastic sheathing, the approved weather coverings shall be attached in accordance with Chapter 14 to minimum 1x3 wood furring strips placed over the foam sheathing. Furring shall be attached through the foam sheathing to wall framing in accordance with Table 1405.18.2.2. When placed horizontally, wood furring strips shall be preservative treated wood in accordance with Section 2303.1.8 or naturally durable wood and fasteners shall be corrosion resistant in accordance with Section 2304.9.5.

Exception: Furring strips shall not be required over foam plastic sheathing behind anchored stone and masonry veneer installed in accordance with Section 1405.6. Veneer ties shall be installed on the surface of the foam plastic sheathing with fasteners of sufficient length to pass through the thickness of foam plastic sheathing and penetrate framing to provide required pull-out resistance determined in accordance with Chapter 16.

TABLE 1405.18.2.2
FASTENING REQUIREMENTS FOR WOOD FURRING OVER FOAM PLASTIC SHEATHING[1,2,3]

Fastener Type	Minimum Penetration into Wall Framing (inches)	Fastener Spacing in Furring[4] (inches)	Maximum Thickness of Foam Sheathing[5] (inches)	16"oc FURRING Maximum Wind Speed (mph)			24"oc FURRING Maximum Wind Speed (mph)		
				Exposure B	Exposure C	Exposure D	Exposure B	Exposure C	Exposure D
0.120" diameter smooth shank nail	1-1/4	8	2	130	110	100	110	90	85
		12	1.5	110	90	85	90	DR	DR
		16	1	90	DR	DR	DR	DR	DR
0.135" diameter smooth shank nail	1-1/4	8	3	130	110	100	110	90	85
		12	2	110	90	85	90	DR	DR
		16	1.5	100	85	DR	DR	DR	DR
#8 wood screw	1	12	3	140	120	110	140	120	110
		16	2	140	120	110	140	120	110
¼" lag screw[6]	1-1/2	24	3	140	120	110	140	120	110

For SI: 1" = 25.4 mm; 1 mph = 1.609 km/h
DR = design required

1. Furring strips shall be spaced a maximum of 24"oc in a vertical or horizontal orientation. Table values are based on minimum ¾-inch (19.1 mm) thick furring strip and wood studs of Spruce-Pine-Fir or any softwood species with a specific gravity of 0.42 or greater per AFPA/NDS.
2. Tabulated maximum wind speed values are based on a mean roof height of 30-feet (9.1 m). Multiply maximum wind speed by 0.95 for a mean roof height of 45 feet (13.7 m) or 0.9 for a mean roof height of 60 feet (18.3 m). For greater mean roof heights, an approved design shall be required.
3. Where minimum required siding fastener penetration exceeds ¾ inch (19.1 mm), a minimum 2x furring strip shall be used unless approved deformed shank siding nails or siding screws are used to provide equivalent withdrawal strength.
4. In a vertical orientation, furring strips shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, furring strips shall be fastened at each stud intersection with a number of fasteners equivalent to the required fastener spacing. In no case shall fasteners be spaced more than 24 inches (0.6 m) apart.
5. Maximum foam sheathing thickness values are based on a maximum 24-inch (0.6 m) stud spacing, a maximum siding dead load of 11 psf (0.53 kPa), and S_{DS} per Section 1613.5.4 not exceeding 0.83g. Siding dead load shall not exceed 8 psf (0.39 kPa) for and S_{DS} of 1.17g, 6 psf (0.29 kPa) for S_{DS} of 1.5g, or 3.0 psf (0.14 kPa) for S_{DS} of 3.0 g.
6. Lag screws shall be installed with a standard cut washer and shall be pre-drilled in accordance with AF&PA NDS-05. Approved self-drilling screws of equal or greater shear and withdrawal strength shall be permitted without pre-drilling.

4. Revise as follows:

1405.14.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6 or foam plastic sheathing in accordance with Sections 1405.14.2 and 1405.18. Siding shall be applied to conform with the water-resistive barrier requirements in Section 1403. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall have a minimum 0.313-inch (7.9 mm) head diameter and 1/8-inch (3.18 mm) shank diameter. The nails shall be corrosion resistant and shall be long enough to penetrate the studs or nailing strip at least 3/4 inch (19 mm). Where the siding is installed horizontally, the fastener spacing shall not exceed 16 inches (406 mm) horizontally and 12 inches (305 mm) vertically. Where the siding is installed vertically, the fastener spacing shall not exceed 12 inches (305 mm) horizontally and 12 inches (305 mm) vertically.

5. Add new text as follows:

1405.14.2 Foam Plastic Sheathing. Vinyl siding used with foam plastic sheathing shall be installed in accordance with 1405.14.2.1, 1405.14.2.2., and 1405.14.2.3.

Exception: Where the foam plastic sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing, or other approved backing capable of independently resisting the design wind pressure, the vinyl siding shall be installed in accordance with 1405.14.1.

1405.14.2.1 Basic Wind Speed Not Exceeding 90 mph and Exposure Category B. Where the basic wind speed does not exceed 90 mph, the Exposure Category is B and gypsum wall board or equivalent is installed on the side of the wall opposite the foam plastic sheathing, the minimum siding fastener penetration into wood framing shall be 1-1/4 inches (32 mm) using minimum 0.120-inch diameter nail (shank) with a minimum 0.313-inch diameter head, and fastened 16 inches on center. The foam plastic sheathing shall comply with Section 1405.18.1 and shall not exceed a maximum thickness of 1.5 inches (38 mm) for a 0.120-inch diameter nail or 2.0 inches (51 mm) for a 0.135-inch diameter nail. Vinyl siding shall be permitted to be installed on furring strips in accordance with Section 1405.18.2.2 and the siding manufacturer's installation instructions when foam plastic sheathing thickness complies with Section 1405.18.1.

1405.14.2.2 Basic Wind Speed Exceeding 90mph or Exposure Categories C and D. Where the basic wind speed exceeds 90 mph or the Exposure Category is C or D, or all conditions of 1405.14.2.1 are not met, the adjusted design pressure rating for the assembly shall meet or exceed the wind loads required by Chapter 16. The design wind pressure rating of the vinyl siding for installation over solid sheathing as provided in the vinyl siding manufacturer's product specifications shall be adjusted for the following wall assembly conditions:

1. For wall assemblies with foam plastic sheathing on the exterior side and minimum ½-inch (12.7 mm) thick gypsum wall board or equivalent on the interior side of the wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.39.
2. For wall assemblies with foam plastic sheathing on the exterior side and no gypsum wall board or equivalent on the interior side of wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.27.

   Exception: The above adjustments shall not apply when vinyl siding is attached to wood furring strips installed over the foam plastic sheathing in accordance with Section 1405.18.2.2 and such installation is in accordance with the vinyl siding manufacturer's installation instructions.

1405.14.2.3 Manufacturer Specification. Where the vinyl siding manufacturer's product specifications provide an approved design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's installation instructions.

6. Revise as follows:

2304.6 Wall sheathing. Except as provided for in Section 1405 for weatherboarding or where stucco construction that complies with Section 2510 is installed, enclosed buildings shall be sheathed with one of the materials of the nominal thickness specified in Table 2304.6, foam sheathing in accordance with Section 1405.18, or any other approved material of equivalent strength and durability.

PART II – IRC BUILDING/ENERGY

1. Add new text as follows:

R703.3 Foam plastic sheathing. Foam plastic sheathing used in exterior wall covering assemblies shall comply with this section, Section R316, Chapter 11 and the manufacturer's installation instructions.

R703.3.1 Minimum thickness. The thickness of foam plastic sheathing shall comply with Table R703.3.1.

Exception: Where foam plastic sheathing is applied directly over or behind wall sheathing or other solid substrate capable of separately resisting the required wind pressure, the limitations of Table R703.3.1 shall not apply.

TABLE R703.3.1
REQUIREMENTS FOR FOAM PLASTIC SHEATHING
IN EXTERIOR WALL COVERING ASSEMBLIES[1,2]

Foam Plastic Sheathing Material[3]	Foam Sheathing Thickness (in)[3]	Maximum Wind Speed (mph) – Exposure B[4]			
		Walls with Interior Finish[5]		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
Siding Attached Directly Over Foam Plastic Sheathing per Section R703.3.2.1					
EPS	¾"	110	NP	90	NP
	1"	130	100	125	NP
	≥1-1/2"	130	130	130	125
Polyiso-cyanurate	½" (faced)	130	90	115	NP
	¾" (faced)	130	120	130	100
	1" (faced)	130	130	130	110
	≥1-1/2" (faced)	130	130	130	115
XPS	½" (faced)	125	85	105	NP
	¾"	110	NP	90	NP
	1"	130	95	120	NP
	≥1-1/2"	130	130	130	115
Siding Offset from Foam Sheathing per Section R703.3.2.2					
	¾"	EPS	NP	NP	NP
	1"		85	105	NP
	≥1-1/2"		130	130	105
Polyiso-cyanurate	½" (faced)	120	NP	100	NP
	¾" (faced)	130	100	130	85
	1" (faced)	130	110	130	95
	≥1-1/2" (faced)	130	120	130	100
XPS	½" (faced)	110	NP	90	NP
	¾"	95	NP	NP	NP
	1"	125	85	105	NP
	≥1-1/2"	130	120	130	100

For SI: 1 inch = 25.4 mm, 1 mile per hour = 1.609 km/h
NP = not permitted
1. Tabulated maximum wind speed values are based on a mean roof height of 30-feet (9.1 m). Multiply maximum wind speed by 0.95 for a mean roof height of 45 feet (13.7 m).

2. Foam plastic sheathing panels shall be permitted to be oriented parallel or perpendicular to framing members.
3. Foam plastic sheathing shall meet or exceed the following material standards: Expanded Polystyrene (EPS) – ASTM C578 (Type II, min.1.35 lb/ft^3 density), Polyisocyanurate – ASTM C1289 (Type 1, min.), and extruded polystyrene (XPS) – ASTM C578 (Type X, min. 1.30 lb/ft^3 density). Where a "faced" product is indicated, a facer shall be provided on both faces of the foam plastic sheathing. Where facing is not indicated in the table, faced and unfaced foam plastic sheathing shall be permitted. For all foam plastic sheathing products, approved manufacturer data shall be permitted in lieu of the table requirements.
4. Multiply tabulated maximum wind speed by 0.85 for wind exposure C or by 0.78 for wind exposure D.
5. Interior finish shall be minimum 1/2-inch (12.7 mm) thick gypsum wall board or an approved product with equivalent or greater out-of-plane bending strength and stiffness.

R703.3.2 Siding attachment over foam sheathing. Siding shall be attached over foam sheathing in accordance with Section R703.3.2.1, Section R703.3.2.2, or an approved design. In no case shall the siding material be used in a manner that exceeds its application limits.

Exception: Where the siding manufacturer has provided installation instructions for application over foam sheathing, those requirements shall apply.

R703.3.2.1 Direct siding attachment. Siding installed directly over foam sheathing without separation by an air space shall comply with Table R703.3.2.1 in regard to nail diameter, penetration, and nail spacing for the applicable foam sheathing thickness and wind speed condition. The siding fastener and siding installation shall otherwise comply with Section R703.4 and Table R703.4.

Exceptions:

1. For vinyl siding, refer to Section R703.11.2.
2. For exterior insulation and finish systems, refer to Section R703.9.
3. For adhered veneer, refer to Section R703.12.

TABLE R703.3.2.1
FASTENING REQUIREMENTS FOR DIRECT SIDING ATTACHMENT OVER FOAM PLASTIC SHEATHING[1,2]

Minimum Nail Diameter[3] (inches)	Nail Spacing along Stud[4] (inches)	Maximum Foam Sheathing Thickness[5] (inches)	16"oc WALL FRAMING Maximum Wind Speed (mph)			24"oc WALL FRAMING Maximum Wind Speed (mph)		
			Exposure B	Exposure C	Exposure D	Exposure B	Exposure C	Exposure D
0.113	6	2	140	120	110	120	100	90
	8	2	130	110	100	100	85	DR
	12	1	100	85	DR	85	DR	DR
0.120	6	3	140	120	110	120	100	90
	8	2	130	110	100	110	90	85
	12	1.5	110	90	85	90	DR	DR
0.135	6	3	140	120	110	130	110	100
	8	3	140	120	110	110	90	85
	12	2	110	90	85	90	DR	DR

For SI: 1 inch = 25.4 mm; 1 mph = 1.609 km/h
DR = design required

1. Maximum wind speed values are based on a minimum 1-1/4 inch (31.8 mm) penetration of a smooth shank nail fastener into wood framing of Spruce-Pine-Fir or any wood species with a specific gravity of 0.42 or greater in accordance with AFPA/NDS.
2. Tabulated maximum wind speed values are based on a mean roof height of 30-feet (9.1 m). Multiply maximum wind speed by 0.95 for a mean roof height of 45 feet (13.7 m).
3. Nail fasteners shall comply with ASTM F1667, except nail length shall be permitted to exceed ASTM F1667 standard lengths to provide a minimum 1-1/4 inch (31.8 mm) penetration into wood framing. Specified nails in accordance with Section R703.4 or the siding manufacturer's installation instructions shall meet all other requirements in ASTM F1667 or be otherwise approved for the intended application.
4. 'Nail spacing along stud' refers to spacing of siding fasteners in the vertical direction. A minimum of one fastener shall be applied at each intersection of an individual siding member with a wall stud.
5. Maximum foam sheathing thickness values are based on a maximum 24-inch (0.6 m) stud spacing and a maximum siding dead load of 11 psf (0.53 kPa) based on 7/8-inch (22 mm) thick Portland cement plaster, For Seismic Design Category D2, the maximum siding dead load shall be 8 psf.

R703.3.2.2 Offset siding attachment. When an airspace separates the siding from direct contact with the foam plastic sheathing, the siding shall be attached in accordance with Section R703.4 and Table R703.4 to minimum 1x3 wood furring strips placed over the foam sheathing. Furring shall be attached through the foam sheathing to wall framing in accordance with Table R703.3.2.2. When placed horizontally, wood furring strips shall be preservative treated wood or naturally durable wood and fasteners shall be corrosion resistant in accordance with Section R317.

Exception: Furring strips shall not be required over foam plastic sheathing located behind anchored stone and masonry veneer installed in accordance with Section R703.7. Veneer ties shall be installed in accordance with Section R703.7.4.1.

TABLE R703.3.2.2
FASTENING REQUIREMENTS FOR WOOD FURRING
OVER FOAM PLASTIC SHEATHING[1,2,3]

Fastener Type	Minimum Penetration into Wall Framing (inches)	Fastener Spacing in Furring[4] (inches)	Maximum Thickness of Foam Sheathing[5] (inches)	16"oc FURRING Maximum Wind Speed (mph)			24"oc FURRING Maximum Wind Speed (mph)		
				Exposure B	Exposure C	Exposure D	Exposure B	Exposure C	Exposure D
0.120" diameter smooth shank nail	1-1/4	8	2	130	110	100	110	90	85
		12	1.5	110	90	85	90	DR	DR
		16	1	90	DR	DR	DR	DR	DR
0.135" diameter smooth shank nail	1-1/4	8	3	130	110	100	110	90	85
		12	2	110	90	85	90	DR	DR
		16	1.5	100	85	DR	DR	DR	DR
#8 wood screw	1	12	3	140	120	110	140	120	110
		16	2	140	120	110	140	120	110
¼" lag screw[6]	1-1/2	24	3	140	120	110	140	120	110

For SI: 1" = 25.4 mm; 1 mph = 1.609 km/h
DR = design required

1. Furring strips shall be spaced a maximum of 24"oc in a vertical or horizontal orientation. Table values are based on minimum ¾-inch (19.1 mm) thick furring strip and wood studs of Spruce-Pine-Fir or any wood species with a specific gravity of 0.42 or greater per AFPA/NDS.
2. Tabulated maximum wind speed values are based on a mean roof height of 30-feet (9.1 m). Multiply maximum wind speed by 0.95 for a mean roof height of 45 feet (13.7 m).
3. Where minimum required siding fastener penetration exceeds ¾ inch (19.1 mm), a minimum 2x furring strip shall be used unless approved deformed shank siding nails or siding screws are used to provide equivalent withdrawal strength.
4. In a vertical orientation, furring strips shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, furring strips shall be fastened at each stud intersection with a number of fasteners equivalent to the required fastener spacing. In no case shall fasteners be spaced more than 24 inches (0.6 m) apart.
5. Maximum foam sheathing thickness values are based on a maximum 24-inch (0.6 m) stud spacing and a maximum siding dead load of 11 psf (0.53 kPa) based on 7/8-inch (22 mm) thick Portland cement plaster. For Seismic Design Category D2, the maximum siding dead load shall be 8 psf.
6. Lag screws shall be installed with a standard cut washer and shall be pre-drilled in accordance with AF&PA NDS-05. Approved self-drilling screws of equal or greater shear and withdrawal strength shall be permitted without pre-drilling.

(Renumber subsequent sections)

2. Revise as follows:

R703.4 Attachments. Unless specified otherwise, all wall coverings shall be securely fastened in accordance with Table R703.4 or with other *approved* aluminum, stainless steel, zinc-coated or other *approved* corrosion-resistive fasteners. Additional requirements in accordance with Section R703.3.2 shall apply when siding is installed over foam sheathing. Where the basic wind speed per Figure R301.2(4) is 110 miles per hour (49 m/s) or higher, the attachment of wall coverings shall be designed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).

TABLE R703.4
WEATHER–RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL		NOMINAL THICKNESS[a] (inches)	JOINT TREATMENT	WATER RESISTIVE BARRIER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS[b,c,d]					
					Wood or wood structural panel sheathing	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Horizontal aluminum[e]	Without insulation	0.019[f]	Lap	Yes	0.120 nail 1½" long	0.120 nail 2" long	0.120 nail 2" long	0.120 nail[y]	Not allowed	Same as stud spacing
		0.024	Yes	Yes	0.120 nail 1½" long	0.120 nail 2" long	0.120 nail 2" long	0.120 nail[y]	Not allowed	
	With insulation	0.019	Yes	Yes	0.120 nail 1½" long	0.120 nail 2½" long	0.120 nail 2½" long	0.120 nail[y]	0.120 nail 1½" long	

SIDING MATERIAL	NOMINAL THICKNESS[a] (inches)	JOINT TREATMENT	WATER RESISTIVE BARRIER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS[b,c,d]					
				Wood or wood structural panel sheathing	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Anchored veneer; brick, concrete, masonry or stone	2	Section R703	Yes	See Section R703 and Figure R703.7[g]					
Adhered veneer; concrete, stone or masonry[w]	–	Section R703	Yes Note w	See Section R703.6.1[g] or in accordance with the manufacturer's instructions					
Hardboard[k] Panel siding-vertical	7/16	–	Yes	Note m	Note m	Note m	Note m	Note m	6" Panel edges 12" inter. Sup."
Hardboard[k] Lap-siding horizontal	7/16	Note p	Yes	Note o	Note o	Note o	Note o	Note o	Same as stud spacing 2 per bearing
Steel[h]	29 ga.	Lap	Yes	0.113 nail and 1¼" Staple-1¾"	0.113 nail and 2¾"Staple 2 ½""	0.113 nail and 2½" Staple-2¼"	0.113 nail[v] Staple[v]	Not allowed	Same as stud spacing
Partcleboard panels	3/8-1/2	–	Yes	6d box nail (2" x 0.099")	6d box nail (2" x 0.099")	6d box nail (2" x 0.099")	box nail[v]	6d box nail (2"x0.099), 3/8 not allowed	6" panel edge, 12"inter. sup.
	3/8	–	Yes	6d box nail (2" x 0.099")	8d box nail (2" x 0.099")	8d box nail (2" x 0.099")	box nail[v]	6d box nail (2" x0.099")	
Wood structural panel siding[l] (exterior grade)	3/8	Note p	Yes	0.099 nail-2"	0.113 nail-2½"	0.113 nail-2½"	0.113 nail[v]	0.099 nail-2"	6" panel edge. 12" inter.sup.
Wood structural panel lapsiding	3/8-1/2	Note p Note x	Yes	0.099 nail-2"	0.113 nail-2½"	0.113 nail-2½"	0.113 nail[x]	0.099 nail-2"	8" along bottom edge
Vinyl siding[l]	0.035	Lap	Yes	0.120 nail (shank) with a 0.313 head or 16 gauge staple with 3/8 to 1/2-inch crown[y,z]	0.120 nail (shank) with a 0.313 head or 16 gauge staple with 3/8 to 1/2-inch crown[y]	0.120 nail (shank) with a 0.313 head or 16 gauge staple with 3/8 to 1/2-inch crown[y]	0.120 nail (shank) with a 0.313 head per Section R[z03.11.2]	Not allowed	16 inches on center or specified by the manufacturer instructions or test report
Wood[j] rustic, drop	3/8 Min	Lap	Yes	Fastener penetration into sud-1"				0.113 nail-2 ½" Staple-2"	Face nailing up to 6" widths, 1 nail per bearing, 8" widths and over, 2 nails per bearing
Shiplap	19/32 Average	Lap	Yes						
Bevel	7/16	Lap	Yes						
Butt tip	3/16	Lap	Yes						
Fiber cement panel siding[q]	5/16	Note q	Yes Note u	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant (12" x 0.113") nail[r]	6d common corrosion-resistant nail[r]	6" o.c. on edges, 12" o.c. on intermed. Studs
Fiber cement lap siding[s]	5/16	Note s	Yes Note u	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant (12" x 0.113") nail[r]	6d common corrosion-resistant nail or 11 gage roofing nail[r]	Note t

For SI: 1 inch = 25.4 mm.

a. Based on stud spacing of 16 inches on center where studs are spaced 24 inches, siding shall be applied to sheathing approved for that spacing.

b. Nail is a general description and shall be T-head, modified round head, or round head with smooth or deformed shanks.

c. Staples shall have a minimum crown width of 7/16-inch outside diameter and be manufactured of minimum 16 gage wire.

d. Nails or staples shall be aluminum, galvanized, or rust-preventative coated and shall be driven into the studs where for fiberboard, or gypsum, or foam plastic sheathing backing is used

e. Aluminum nails shall be used to attach aluminum siding.
f. Aluminum (0.019 inch) shall be unbacked only when the maximum panel width is 10 inches and the maximum flat area is 8 inches. The tolerance for aluminum siding shall be +0.002 inch of the nominal dimension.
g. All attachments shall be coated with a corrosion-resistant coating.
h. Shall be of approved type.
i. Three-eighths-inch plywood shall not be applied directly to studs spaced more than 16 inches on center when long dimension is parallel to studs. Plywood 1/2-inch or thinner shall not be applied directly to studs spaced more than 24 inches on center. The stud spacing shall not exceed the panel span rating provided by the manufacturer unless the panels are installed with the face grain perpendicular to the studs or over sheathing approved for that stud spacing.
j. Wood board sidings applied vertically shall be nailed to horizontal nailing strips or blocking set 24 inches on center. Nails shall penetrate 1 1/2 inches into studs, studs and wood sheathing combined or blocking. For application over foam sheathing, refer to Section R703.3.2.2. combined or blocking.
k. Hardboard siding shall comply with CPA/ANSI A135.6.
l. Vinyl siding shall comply with ASTM D 3679.
m. Minimum shank diameter of 0.092 inch, minimum head diameter of 0.225 inch, and nail length must accommodate sheathing and penetrate framing 1 1/2 inches. For application over foam sheathing, minimum shank diameter and penetration into framing shall comply with Section R703.3.2.
n. When used to resist shear forces, the spacing must be 4 inches at panel edges and 8 inches on interior supports.
o. Minimum shank diameter of 0.099 inch, minimum head diameter of 0.240 inch, and nail length must accommodate sheathing and penetrate framing 1 1/2 inches. For application over foam sheathing, minimum shank diameter and penetration into framing shall comply with Section R703.3.2.
p. Vertical end joints shall occur at studs and shall be covered with a joint cover or shall be caulked.
q. See Section R703.10.1.
r. Fasteners shall comply with the nominal dimensions in ASTM F 1667. For application over foam sheathing, refer to Section R703.3.2
s. See Section R703.10.2.
t. Face nailing: one 6dcommonnail through the overlapping planks at each stud. Concealed nailing: one 11 gage 11/2 inch long galv. roofing nail through the top edge of each plank at each stud.
u. See Section R703.2 exceptions.
v. Minimum nail length must accommodate sheathing and penetrate framing 11/2 inches. For application over foam sheathing, refer to Section R703.3.2
w. Adhered masonry veneer shall comply with the requirements of Section R703.6.3 and shall comply with the requirements in Sections 6.1 and 6.3 of ACI 530/ASCE 5/TMS-402.
x. Vertical joints, if staggered shall be permitted to be away from studs if applied over wood structural panel sheathing.
y. Minimum fastener length must accommodate sheathing and penetrate framing .75 inches or in accordance with the manufacturer's installation instructions. For application over foam sheathing, fastener penetration into framing shall comply with Section R703.3.2.
z. Where approved by the manufacturer's instructions or test report siding shall be permitted to be installed with fasteners penetrating not less than .75 inches throughwood orwood structural sheathing with or without penetration into the framing.
aa. Refer to Section R703.3 for additional requirements.
bb. For siding application over foam sheathing, fastener spacing shall comply with the more stringent requirement of this table or Section R703.3.2.

R703.5.1 Application. Wood shakes or shingles shall be applied either single-course or double-course over nominal 1/2-inch (13 mm) wood-based sheathing or to furring strips over nominal 1/2-inch (13 mm) nonwood sheathing.

Exception: Wood shakes or shingles over foam plastic sheathing, shall be applied to wood furring strips in accordance with Section R703.3.2.2.

A permeable water-resistive barrier shall be provided in accordance with Section R703.2 over all sheathing, with horizontal overlaps in the membrane of not less than 2 inches (51mm) and vertical overlaps of not less than 6 inches (152 mm). Where furring strips are used, they shall be 1 inch by 3 inches or 1 inch by 4 inches (25mmby 76 mm or 25mm by 102 mm), and shall be fastened horizontally to the studs with 7d or 8d box nails. For application over foam plastic sheathing, furring strips shall be fastened in accordance with Section R703.3.2.2. and Furring strips shall be spaced a distance on center equal to the actual weather exposure of the shakes or shingles, not to exceed the maximum exposure specified in Table R703.5.2. The spacing between adjacent shingles to allow for expansion shall not exceed 1/4 inch (6 mm), and between adjacent shakes, it shall not exceed 1/2 inch (13 mm). The offset spacing between joints in adjacent courses shall be a minimum of 11/2 inches (38 mm).

R703.6.1 Lath. All lath and lath attachments shall be of corrosion-resistant materials. Expanded metal or woven wire lath shall be attached with 1 1/2-inch-long (38 mm), 11 gage nails having a 7/16-inch (11.1 mm) head, or 7/8-inch-long (22.2 mm), 16 gage staples, spaced at no more than 6 inches (152 mm), or as otherwise *approved*. For application of maximum 7/8-inch-thick Portland cement plaster over foam plastic sheathing, nail length and shank diameter shall comply with Section R703.3.2.

R703.7.4.1 Size and spacing. Veneer ties, if strand wire, shall not be less in thickness than No. 9 U.S. gage [(0.148 in.) (4 mm)] wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by [(0.0299 in.)(0.76 mm)] 7/8 inch (22 mm) corrugated. Each tie shall be spaced not more than 24 inches (610 mm) on center horizontally and vertically and shall support not more than 2.67 square feet (0.25 m2) of wall area. For application over foam plastic sheathing, corrugated metal ties shall be fastened through the foam plastic sheathing using a 10d common nail with a minimum penetration of 1 1/2 inches (38 mm) into wood framing for a maximum wind condition of 90 miles per hour (40 m/s) in wind exposure B. For a basic wind speed not exceeding

110 miles per hour (49 m/s) in any wind exposure and in Seismic Design Categories C, D_0, D_1, and D_2, a #8 wood screw with a minimum 1 inch (25.4 mm) penetration into wood wall framing shall be used in each tie. Alternatively, an approved fastener with equivalent withdrawal strength shall be permitted.

Exception: In Seismic Design Category D_0, D_1 or D_2 or townhouses in Seismic Design Category C or in wind areas of more than 30 pounds per square foot pressure (1.44 kPa), each tie shall support not more than 2 square feet (0.2 m2) of wall area.

R703.11.2 Foam plastic sheathing. Vinyl siding used with foam plastic sheathing shall be installed in accordance with Section R703.11.2.1, R703.11.2.2, or R703.11.2.3.

Exception: Where the foam plastic sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing or other *approved* backing capable of independently resisting the design wind pressure, the vinyl siding shall be installed in accordance with Section R703.11.1.

R703.11.2.1 Basic wind speed not exceeding 90 miles per hour and Exposure Category B. Where the basic wind speed does not exceed 90 miles per hour (40 m/s), the Exposure Category is B and gypsum wall board or equivalent is installed on the side of the wall opposite the foam plastic sheathing, the minimum siding fastener penetration into wood framing shall be 11/4 inches (32 mm) using minimum 0.120-inch diameter nail (shank) with a minimum 0.313-inch diameter head, 16 inches on center. The foam plastic sheathing minimum thickness shall comply with Section R703.3.1 and shall not exceed a maximum thickness of 1.5 inches (38mm) for a 0.120-inch diameter nail or 2.0 inches (51 mm) for a 0.135-inch diameter nail. shall be 1/2-inch-thick (12.7 mm) (nominal) extruded polystyrene per ASTM C578, 1/2-inch-thick (12.7 mm) (nominal) polyisocyanurate per ASTM C1289, or 1-inch-thick (25 mm)(nominal) expanded polystyrene per ASTM C578. Vinyl siding shall be permitted to be installed on furring strips in accordance with Section 1405.18.2.2 using the siding manufacturer's installation instructions when foam plastic sheathing thickness complies with Section1405.18.1.

R703.11.2.2 Basic wind speed exceeding 90 miles per hour or Exposure Categories C and D. Where the basic wind speed exceeds 90 miles per hour (40 m/s) or the Exposure Category is C or D, or all conditions of Section R703.11.2.1 are not met, the adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Tables R301.2(2) adjusted for height and exposure using Section R301.2(3). The design wind pressure rating of the vinyl siding for installation over solid sheathing as provided in the vinyl siding manufacturer's product specifications shall be adjusted for the following wall assembly conditions:

1. For wall assemblies with foam plastic sheathing on the exterior side and minimum ½-inch-thick gypsum wall board or equivalent on the interior side of the wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.39.
2. For wall assemblies with foam plastic sheathing on the exterior side and no gypsum wall board or equivalent on the interior side of wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.27.

   Exception: The above adjustments shall not apply when vinyl siding is attached to wood furring strips installed over the foam plastic sheathing in accordance with Section R703.3.2.2 and such installation is in accordance with the vinyl siding manufacturer's installation instructions.

R703.11.2.3 Manufacturer specification. Where the vinyl siding manufacturer's product specifications provide an *approved* design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's installation instructions.

Reason:

Part I-As with a related IRC proposal, this proposal is a comprehensive clarification and upgrading of requirements for foam plastic sheathing and siding installation over foam plastic sheathing. It primarily addresses adequate foam sheathing thickness and siding attachment over foam sheathing to resist a range of design wind load conditions, beyond which design is required or installation in accordance with manufacturer instructions specific to application of siding over foam sheathing. It also provides siding connections through foam sheathing that provide adequate support to resist the dead load of siding installed over foam sheathing and limits the siding weight, particularly in higher seismic conditions (beyond which design is required or approved installation guidelines). As a whole, these provisions are necessary to ensure appropriate use of foam sheathing and siding materials together on exterior wall assemblies in a way that best compliments existing exterior wall covering provisions in Chapter 14. A detailed explanation of the test data and analysis justifying the proposed requirements can be found at www.foamsheathing.org.

In support of proposed new Section 1405.18.1, the wind pressure resistance of foam sheathing used in this proposal is based on certified full-scale (4'x8' panel) testing conducted at the NAHB Research Center, Inc. Samples included specimens from various manufacturers representing the industry at large. The design wind speed data (without rounding or capping values) is shown in the table below for informational purposes. The values in the proposed table have been rounded to the nearest 5 mph increment and capped at 130 mph (Exposure B) which corresponds to a maximum wind speed of 110 mph in exposure C or 100 mph Exposure D. This proposal is needed to avoid potential exclusion of foam sheathing products due to the incompleteness of current code requirements which can negatively affect other concerns such as energy conservation code

requirements and green building interests. Most importantly, these requirements will ensure that foam sheathing is used appropriately to prevent building envelope damage, particularly in higher wind conditions and with thinner material used on more widely spaced studs (e.g., 24"oc center on gable roof ends which typically have no interior finish). These requirements also agree reasonably well with the generally successful use of foam sheathing on typical wall assemblies (e.g., 16"oc framing or 24"oc framing with interior finish) on many buildings in lower wind regions of the U.S.

TABLE R703.3.1- Part A (Actual design values based on test data – not rounded or capped as in the proposal)
MAXIMUM WIND SPEED (mph – 3 SECOND GUST) PERMITTED
FOR FOAM PLASTIC SHEATHING
WITH DIRECTLY ATTACHED SIDING PER SECTION R703.3.2.1

Foam Sheathing Material[3]	Foam Sheathing Nominal Thickness (in)	Maximum Wind Speed (mph) – Exposure B[4]			
		Walls with Interior Finish[5]		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
EPS	¾" (unfaced)	110	73	92	61
	1" (unfaced)	147	98	123	82
	1-1/2" (unfaced)	222	148	186	124
Polyiso-cyanurate	½" (faced)	136	91	114	76
	¾" (faced)	177	118	148	99
	1" (faced)	193	129	162	108
	1-1/2" (faced)	207	138	173	116
XPS	½" (faced)	125	84	105	70
	¾" (unfaced)	109	73	91	61
	1" (unfaced)	145	97	121	81
	1-1/2" (unfaced)	208	139	174	116

Design value based on the minimum tested uniform pressure capacity for each sheathing type and thickness category divided by a safety factor of 1.5 and ASCE 7-05 positive pressure design loads for wall corner zone and a 10 sq ft wind effective area (negative pressure is resisted by the foam sheathing and siding assembly). Because the 1.5 safety factor is applied to a minimum test value (not the average), these requirements are more stringent than safety margins required for other building envelop components such as doors and windows which are also important to envelope integrity. This "minimum test value" basis also serves to better control safety margins with regard to variability in material properties or performance.

TABLE R703.3.1 – Part B (Actual design values based on test data – not rounded or capped as in the proposal)
MAXIMUM WIND SPEED (mph – 3 SECOND GUST) PERMITTED
FOR FOAM PLASTIC SHEATHING
WITH FURRED SIDING PER SECTION R703.3.2.2[1]

Foam Plastic Sheathing Material[2]	Foam Sheathing Nominal Thickness (in)[2]	Maximum Wind Speed (mph) – Exposure B[3,4]			
		Walls with Interior Finish[5]		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
EPS	¾"	95	63	80	53
	1"	127	85	106	71
	≥1-1/2"	192	128	161	107
Polyiso-cyanurate	½" (faced)	118	78	98	66
	¾" (faced)	153	102	128	85
	1" (faced)	167	112	140	93
	≥1-1/2" (faced)	179	120	150	100
XPS	½" (faced)	108	72	91	61
	¾"	94	63	79	53
	1"	126	84	105	70
	≥1-1/2"	180	120	151	101

Design value based on the minimum tested uniform pressure capacity for each sheathing type and thickness category divided by a safety factor of 1.5 and ASCE 7-05 negative pressure design loads for wall corner zone and a 10 sq ft wind effective area. Because the siding is spaced away from foam sheathing in this wall covering assembly condition, it does not contribute to foam sheathing resistance. Thus, the foam sheathing must independently resist the negative wind pressure load. The furring strips provide adequate bearing at connection to secure the foam sheathing as well as the siding material.

In support of proposed new Section 1405.18.2, the generalized connection requirements for siding over foam sheathing are based on an analysis using the AF&PA NDS-2005 connection design provisions in consideration of withdrawal to resist wind pressure and shear strength to resist siding dead load. To account for the "gap" in the connection caused by the presence of foam sheathing, the provisions of AF&PA TR12 were used to downgrade connection strength based on the thickness of foam sheathing (i.e., width of gap in the connection). The design shear strength was based on calculated ultimate capacity divided by a safety factor of 2 while conservatively ignoring any benefit of the foam material filling the gap in the siding or furring connection to wall framing. Wind loads were based on application of the full ASCE 7-05 components and cladding wind pressure applied to the exterior wall covering while conservatively ignoring any distribution of wind pressure to other wall layers. In addition, the wind pressures were based on the most stringent wall corner zone condition and an effective wind area of 10 sq ft.

Addition of new Section 1405.14.2 provides special requirements and limitations for use of foam plastic sheathing with vinyl siding. The proposed changes are consistent approved changes now included in the 2009 IRC. These changes are needed to ensure appropriate use of vinyl siding wind pressure ratings when foam sheathing is used, thus preventing inadequate performance.

Limited changes to other parts of the code are made in coordination with the above improvements.

Part II- As with a related IBC proposal, this proposal is a comprehensive clarification and upgrading of requirements for foam sheathing and siding installation over foam sheathing. It primarily addresses adequate foam sheathing thickness and siding attachment over foam sheathing to resist design wind loads within the scope of the IRC (e.g., up to 110 mph, Exposure D). It also provides siding connections through foam sheathing that provide adequate support to resist the dead load of siding installed over foam sheathing. As a whole, these provisions are necessary to ensure appropriate use of foam sheathing and siding materials together on exterior wall assemblies in a way that best compliments existing exterior wall covering provisions in Section R703 of the code. A detailed explanation of the test data and analysis justifying the proposed requirements can be found at www.foamsheathing.org.

In support of proposed new Section R703.3.1, the wind pressure resistance of foam sheathing used in this proposal is based on certified full-scale (4'x8' panel) testing conducted at the NAHB Research Center, Inc. Samples included specimens from various manufacturers representing the industry at large. The design wind speed data (without rounding or capping values) is shown in the table below for informational purposes. The

values in the proposed table have been rounded to the nearest 5 mph increment and capped at 130 mph (Exposure B) as this corresponds to a maximum wind speed of 110 mph in exposure C, which is essentially the scope limit of the IRC. This proposal is needed to avoid potential exclusion of foam sheathing products due to the incompleteness of current code requirements which can negatively affect other concerns such as energy conservation code requirements and green building interests. Most importantly, these requirements will ensure that foam sheathing is used appropriately to prevent building envelope damage, particularly in higher wind conditions and with thinner material used on more widely spaced studs (e.g., 24"oc center on gable roof ends which typically have no interior finish). These requirements also agree reasonably well with the generally successful use of foam sheathing on typical wall assemblies (e.g., 16"oc framing or 24"oc framing with interior finish) on many homes in lower wind regions of the U.S.

TABLE R703.3.1- Part A (Actual design values based on test data – not rounded or capped as in the proposal)
MAXIMUM WIND SPEED (mph – 3 SECOND GUST) PERMITTED
FOR FOAM PLASTIC SHEATHING
WITH DIRECTLY ATTACHED SIDING PER SECTION R703.3.2.1

Foam Sheathing Material[3]	Foam Sheathing Nominal Thickness (in)	Maximum Wind Speed (mph) – Exposure B[4]			
		Walls with Interior Finish[5]		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
EPS	¾" (unfaced)	110	73	92	61
	1" (unfaced)	147	98	123	82
	1-1/2" (unfaced)	222	148	186	124
Polyiso-cyanurate	½" (faced)	136	91	114	76
	¾" (faced)	177	118	148	99
	1" (faced)	193	129	162	108
	1-1/2" (faced)	207	138	173	116
XPS	½" (faced)	125	84	105	70
	¾" (unfaced)	109	73	91	61
	1" (unfaced)	145	97	121	81
	1-1/2" (unfaced)	208	139	174	116

Design value based on the minimum tested uniform pressure capacity for each sheathing type and thickness category divided by a safety factor of 1.5 and ASCE 7-05 positive pressure design loads for wall corner zone and a 10 sqft wind effective area (negative pressure is resisted by the foam sheathing and siding assembly). Because the 1.5 safety factor is applied to a minimum test value (not the average), these requirements are more stringent than safety margins required for other building envelop components such as doors and windows which are also important to envelope integrity. This "minimum test value" basis also serves to better control safety margins with regard to variability in material properties or performance.

TABLE R703.3.1 – Part B (Actual design values based on test data – not rounded or capped as in the proposal)
MAXIMUM WIND SPEED (mph – 3 SECOND GUST) PERMITTED
FOR FOAM PLASTIC SHEATHING
WITH FURRED SIDING PER SECTION R703.3.2.2[1]

Foam Plastic Sheathing Material[2]	Foam Sheathing Nominal Thickness (in)[2]	Maximum Wind Speed (mph) – Exposure B[3,4]			
		Walls with Interior Finish[5]		Walls without Interior Finish	
		16"oc framing	24"oc framing	16"oc framing	24"oc framing
EPS	¾"	95	63	80	53
	1"	127	85	106	71
	≥1-1/2"	192	128	161	107
Polyiso-cyanurate	½" (faced)	118	78	98	66
	¾" (faced)	153	102	128	85
	1" (faced)	167	112	140	93
	≥1-1/2" (faced)	179	120	150	100
XPS	½" (faced)	108	72	91	61
	¾"	94	63	79	53
	1"	126	84	105	70
	≥1-1/2"	180	120	151	101

Design value based on the minimum tested uniform pressure capacity for each sheathing type and thickness category divided by a safety factor of 1.5 and ASCE 7-05 negative pressure design loads for wall corner zone and a 10 sqft wind effective area. Because the siding is spaced away from foam sheathing in this wall covering assembly condition, it does not contribute to foam sheathing resistance. Thus, the foam sheathing must independently resist the negative wind pressure load. The furring strips provide adequate bearing at connection to secure the foam sheathing as well as the siding material.

In support of proposed new Section R703.3.2, the generalized connection requirements for siding over foam sheathing are based on an analysis using the AF&PA NDS-2005 connection design provisions in consideration of withdrawal to resist wind pressure and shear strength to resist siding dead load. To account for the "gap" in the connection caused by the presence of foam sheathing, the provisions of AF&PA TR12 were used to downgrade connection strength based on the thickness of foam sheathing (i.e., width of gap in the connection). The design shear strength was based on calculated ultimate capacity divided by a safety factor of 2 while conservatively ignoring any benefit of the foam material filling the gap in the siding or furring connection to wall framing. Wind loads were based on application of the full ASCE 7-05 components and cladding wind pressure applied to the exterior wall covering while conservatively ignoring any distribution of wind pressure to other wall layers. In addition, the wind pressures were based on the most stringent wall corner zone condition and an effective wind area of 10 sqft.

Changes to other parts of Section R703, including changes to Table R703.4 and various siding attachment requirements, are made in coordination with the above improvements.

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

Analysis: ASTM standards within this proposed are currently referenced in the I-codes.

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: CRANDELL-FS1-1404.12

FS157–09/10
1406.2, 1406.3, 1406.4, TABLE 1406.2.1.2

Proponent: Rick Thornberry, PE, Jesse J. Beitel, The Code Consortium, Inc., Hughes Associates, Inc., representing Alcan Composites USA, Inc., Trespa North America, Ltd.

Revise as follows:

SECTION 1406
COMBUSTIBLE MATERIALS ON THE EXTERIOR SIDE OF EXTERIOR WALLS

1406.1 General. Section 1406 shall apply to exterior wall coverings; balconies and similar protections: and bay and oriel windows constructed of combustible materials.
1406.2 Combustible exterior wall coverings. Combustible exterior wall coverings shall comply with this section.

Exception: Plastics complying with Chapter 26.

1406.2.2<u>1</u> Type I, II, III and IV construction. On buildings of Type I, II, III and IV construction, exterior wall coverings shall be permitted to be constructed of ~~wood in accordance with Section 1405.5, or other equivalent~~ combustible material<u>s</u>, complying with the following limitations:

1. Combustible exterior wall coverings shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less.
2. Combustible <u>exterior wall coverings</u> ~~architectural trim~~ shall be limited to 40 feet (12 192mm) in height above grade <u>plane</u>.
3. Combustible exterior wall coverings constructed of fire-retardant-treated wood complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the fire separation distance is 5 feet (1524 mm) or less and shall be permitted up to 60 feet (18 288 mm) in height above grade <u>plane</u> regardless of the fire separation distance.
4. <u>Wood veneers shall comply with Section 1405.5.</u>

1406.2.1<u>.1</u> Ignition resistance. <u>Where permitted by Section 1406.2.1,</u> combustible exterior wall coverings shall be tested in accordance with NFPA 268.

Exceptions:

1. Wood or wood-based products.
2. Other combustible materials covered with an exterior covering other than vinyl sidings listed in Table 1405.2.
3. Aluminum having a minimum thickness of 0.019 inch (0.48 mm).
4. ~~Exterior wall coverings on exterior walls of Type V construction.~~

1406.2.1.1<u>.1</u> Fire separation 5 feet or less. Where installed on exterior walls having a fire separation distance of 5 feet (1524 mm) or less, combustible exterior wall coverings shall not exhibit sustained flaming as defined in NFPA 268.

1406.2.1.<u>1.</u>2 Fire separation greater than 5 feet. For fire separation distances greater than 5 feet (1524 mm), any <u>exterior wall covering</u> ~~assembly~~ shall be permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the <u>exterior wall covering</u> ~~assembly~~ shall be determined from Table 1406.2.1.<u>1</u>.2 based on the

maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the exterior wall covering ~~assembly~~.

Table 1406.2.1.1.2
MINIMUM FIRE SEPARATION FOR COMBUSTIBLE EXTERIOR WALL COVERINGS ~~VENEERS~~
(Potions of Table not shown, remain unchanged)

1406.2.~~3~~2 Location. ~~Where~~ Combustible exterior wall coverings ~~is~~ located along the top of exterior walls~~, such trim~~ shall be completely backed up by the exterior wall and shall not extend over or above the top of the exterior wall~~s~~.

1406.2.~~4~~ 3 Fireblocking. Where the combustible exterior wall covering is furred out from the exterior wall and forms a solid surface, the distance between the back of the covering and the wall shall not exceed 1 5/8 inches (41 mm). ~~Where required by Section 717,~~ The concealed space thereby created shall be fireblocked in accordance with Section 717.

1406.3 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant-treated wood shall be fire-resistance rated ~~in accordance with~~ where required by Table 601 for floor construction or shall be of Type IV construction in accordance with Section 602.4. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.

Exceptions:

1. On buildings of Type I and II construction, three stories or less above grade plane, fire-retardant-treated wood shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.
2. Untreated wood is permitted for pickets and rails or similar guardrail devices that are limited to 42 inches (1067 mm) in height.
3. Balconies, and similar projections on buildings of Types III, IV and V construction shall be permitted to be of Type V construction~~,~~ and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.

1406.4 Bay ~~windows~~ and oriel windows. Bay and oriel windows shall conform to the type of construction required for the building to which they are attached.

Exception: Fire-retardant-treated wood shall be permitted on buildings three stories or less above grade plane of Type I, II, III or ~~and~~ IV construction.

Reason: This code change is editorial. It accomplishes a number of things as indicated in the following.

1. It slightly reorganizes the section so that the provisions that permit combustible exterior wall coverings to be installed on exterior walls of buildings of Types I, II, III, and IV construction (current Section 1406.2.2) comes before the section that requires those combustible exterior wall coverings to be tested in accordance with NFPA 268 (current Section 1406.2.1).
2. It clarifies that current Section 1406.2.1 (redesignated as Section 1406.2.1.1 by this code change) applies where combustible exterior wall coverings are permitted by current Section 1406.2.2 (redesignated as Section 1406.2.1 by this code change). The purpose for doing this is so that the users of the code are not misled into thinking that if a combustible exterior wall covering complies with this section, it can be used wherever noncombustible exterior wall coverings are required. In other words, the code has to first permit the use of combustible exterior wall coverings and when that is satisfied, then the combustible exterior wall coverings are required to comply with this section.
3. Current Section 1406.2.1.2 (redesignated as Section 1406.2.1.1.2 by this code change) is editorially revised to utilize the defined term "Exterior Wall Covering" in lieu of "assembly" since the test method is intended to apply to the exterior wall covering.
4. The title to current Table 1406.2.1.2 (redisignated as Table 1406.2.1.1.2 by this code change) is editorially revised to delete the reference to "Veneers" and substitute the term "Exterior Wall Coverings" which, as noted above, is a defined term applicable to this particular section.
5. The charging sentence in current Section 1406.2.2 (redesigated as Section 1406.2.1 by this code change) has been revised to delete the reference to Section 1405.5 and relocate it as a new Item 4 in the list of limitations for the allowable use of combustible materials. We believe this makes more sense to have the requirements for the use of wood veneers on exterior walls of buildings of Type I, II, III, and IV construction referenced in the list of limitations rather than in the charging sentence. The charging sentence should be more general by just referring to combustible materials which are the subject of this section.
6. In current Section 1406.2.2 (redesignated as Section 1406.2.1 by this code change) Item 2 has been clarified to indicate that it applies to all "exterior wall coverings" and not just "architectural trim." It should be noted in the definition for "exterior wall coverings" that architectural trim is included. However, architectural trim is not defined by itself. So it follows that if architectural trim is allowed up to 40 feet in height above grade plane, then any type of combustible exterior wall covering should be so limited as well.
7. The rest of the changes are editorial clarifications without making any technical changes.

In summary, we believe the revisions proposed to this code change will help to clarify the application and interpretation of this section and make it easier to use, as well as 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

ICCFILENAME: Thornberry-FS5-1406

FS158–09/10
1406.2.1.2

Proponent: Don Davies representing Utah Chapter of ICC

Delete without substitution:

~~**1406.2.1.2 Fire separation greater than 5 feet.** For fire separation distances greater than 5 feet (1524 mm), an assembly shall be permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the assembly shall be determined from Table 1406.2.1.2 based on the maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the assembly.~~

~~TABLE 1406.2.1.2~~
~~MINIMUM FIRE SEPARATION FOR COMBUSTIBLE VENEERS~~

~~FIRE SEPARATION DISTANCE (feet)~~	~~TOLERABLE LEVEL INCIDENT RADIANT HEAT ENERGY(kW/m2)~~	~~FIRE SEPARATION DISTANCE (feet)~~	~~TOLERABLE LEVEL INCIDENT RADIANT HEAT ENERGY(kW/m2)~~
~~5~~	~~12.5~~	~~16~~	~~5.9~~
~~6~~	~~11.8~~	~~17~~	~~5.5~~
~~7~~	~~11.0~~	~~18~~	~~5.2~~
~~8~~	~~10.3~~	~~19~~	~~4.9~~
~~9~~	~~9.6~~	~~20~~	~~4.6~~
~~10~~	~~8.9~~	~~21~~	~~4.4~~
~~11~~	~~8.3~~	~~22~~	~~4.1~~
~~12~~	~~7.7~~	~~23~~	~~3.9~~
~~13~~	~~7.2~~	~~24~~	~~3.7~~
~~14~~	~~6.7~~	~~25~~	~~3.5~~
~~15~~	~~6.3~~		

Reason: Now that I.B.C. Section 705.5 has been changed in the 2009 I.B.C. increasing the fire separation distance from 5 feet to 10 where the fire-resistance of the exterior walls is required on both sides of the wall there is no longer a compelling reason to address radiant heat flux in 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

ICCFILENAME: Davies-FS1-1406.2.1.2

FS159–09/10
1406.2.4

Proponent: Rick Thornberry, PE, Jesse J. Beitel, The Code Consortium, Inc., Hughes Associates, Inc., representing Trespa North America, Ltd.

Revise as follows:

1406.2.4 Fireblocking. Where the combustible exterior wall covering is furred <u>out</u> from the <u>exterior</u> wall and forms a solid surface, the distance between the back of the <u>exterior wall</u> covering and the <u>exterior</u> wall shall not exceed 1 5/8 inches (41 mm). Where required by Section 717, the <u>concealed</u> space thereby created shall be fireblocked.

> **<u>Exception:</u>** <u>The distance between the back of the exterior wall covering and the exterior wall shall be permitted to exceed 1 5/8 inches (41 mm) where the concealed space is not required to be fireblocked by Section 717.</u>

Reason: Some editorial clarifications are made to Section 1406.2.4 to make the section more enforceable and subject to less interpretation. Also a new Exception is added to allow for the distance between the back of the exterior wall covering and the exterior wall to exceed the 1-5/8 inches limit where the concealed space so created is not required to be fireblocked by Section 717. In our opinion, it follows that if the concealed space does not require fireblocking, there is no need to be concerned about the maximum set off of the exterior wall covering from the face of the exterior wall.

The applicable Exception in Section 717.2.6 is Exception 2 which allows the fireblocking to be omitted when the face of the combustible exterior wall covering exposed to the concealed space is covered by the noncombustible materials listed in that Exception. Furthermore, we have proposed a separate code change which will further modify Section 717.2.6 to add a new Exception 3 that will allow the omission of fireblocking in these concealed spaces when the exterior wall covering has been tested in accordance with NFPA 285 Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonload-Bearing Wall Assemblies Containing Combustible Components and has successfully met the acceptance criteria therein. In both those cases there will be little opportunity for a fire in the concealed space to spread via the materials in the concealed space because of their noncombustible coverings or because they successfully passed NFPA 285 to show limited fire and flame spread over the face of, as well as within the interior of, the exterior wall system.

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

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

ICCFILENAME: Thornberry-Beitel-FS9-1406.2.4

FS160–09/10

1407.10.2, 2603.4, Chapter 35; IRC R316.4

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing self

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

1. Revise as follows:

1407.10.2 Thermal barriers. MCM shall be separated from the interior of a building by an approved thermal barrier consisting of ½ -inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275. ~~equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250°F (121°C) after 15 minutes of fire exposure in accordance with the standard time-temperature curve of ASTME 119 or UL 263. The thermal barrier shall be installed in such a manner that it will remain in place for not less than 15 minutes based on a test conducted in accordance withUL1715.~~

2603.4 Thermal barrier. Except as provided for in Sections 2603.4.1 and 2603.9, foam plastic shall be separated from the interior of a building by an approved thermal barrier of ½-inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275. ~~equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250°F (120°C) after 15 minutes of fire exposure, complying with the standard time-temperature curve of ASTM E 119 or UL 263. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on FM 4880, UL 1040, NFPA 286 or UL 1715.~~ Combustible concealed spaces shall comply with Section 717.

2. Add new standard to Chapter 35 as follows:

NFPA 275–09	Standard Method of Fire Tests for the Evaluation of Thermal Barriers Used Over Foam Plastic Insulation

PART II – IRC BUILDING/ENERGY

1. Revise as follows:

R316.4 Thermal barrier. Unless otherwise allowed in Section R316.5 or Section R316.6, foam plastic shall be separated from the interior of a building by an *approved* thermal barrier of minimum ½ inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275. ~~an *approved* finish material equivalent to a thermal barrier material that will limit the average temperature rise of the unexposed surface to no more than 250°F (139°C)~~

~~after 15 minutes of fire exposure complying with the ASTM E 119 or UL 263 standard time temperature curve. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based on NFPA 286 with the acceptance criteria of Section R302.9.4, FM 4880, UL 1040 or UL 1715.~~

2. Add new standard to Chapter 35 as follows:

NFPA 275–09 Standard Method of Fire Tests for the Evaluation of Thermal Barriers Used Over Foam Plastic Insulation

Reason: The thermal barrier requirement has been in the Codes since the addition of the foam plastics Sections/Chapters in the late 1970's. The Code requirements for a material to be a thermal barrier are vague and imprecise. Over time confusion has occurred relating to the specific test(s) to use and the interpretation of the existing Code language.

The new NFPA 275 "Standard Method of Fire Tests for the Evaluation of Thermal barriers Used Over Foam Plastic Insulation" was developed to specifically address the testing of materials to qualify as a thermal barrier. The test method provides specific sample construction, fire exposures and acceptance criteria to qualify a material to be a 15-minute thermal barrier. The test method address both the capability of the material to retard heat transfer via a fire-resistance test and to remain in place via a full-scale fire test.

Cost Impact: The code change proposal will not increase the cost of construction.
Analysis: Code change proposal FS160 and FS161 address thermal barrier requirements. The committee needs to make its intent clear with respect to these provisions. A review of the standard(s) proposed for inclusion in the code, NFPA 275-09, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: BEITEL-FS11-2603.4

FS161–09/10

1407.10.2, 1407.10.2.1 (New), 1407.2.1 (New), 2603.4, 2603.4.1, 2603.4.2, Chapter 35

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

1. Revise as follows:

1407.10.2 Thermal barriers. MCM shall be separated from the interior of a building by an approved thermal barrier consisting of $^1/_2$-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material ~~that will limit the average temperature rise of the unexposed surface to not more than 250°F (121°C) after 15 minutes of fire exposure in accordance with the standard time-temperature curve of ASTM E 119 or UL 263. The thermal barrier shall be installed in such a manner that it will remain in place for not less than 15 minutes based on a test conducted in accordance with UL 1715~~.The thermal barrier material shall comply with Section 1407.10.2.1 or 1407.10.2.2.

1407.10.2.1 Temperature transmission and integrity. The thermal barrier material shall comply with the requirements of the temperature transmission fire test and of the integrity fire test in NFPA 275, Standard Method of Fire Tests for the Evaluation of Thermal Barriers Used Over Foam Plastic Insulation.

1407.10.2.2 Temperature transmission and conditions of acceptance. The thermal barrier material shall comply with the temperature transmission test in NFPA 275 and with the conditions of acceptance of UL 1715 when tested in conjunction with the MCM, at the maximum thickness intended for use, for a period of 15 minutes.

2. Revise as follows:

2603.4 Thermal barrier. Except as provided for in Sections ~~2603.4.1~~ 2603.4.3 and 2603.9, foam plastic shall be separated from the interior of a building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material ~~that will limit the average temperature rise of the unexposed surface to not more than 250°F (120°C) after 15 minutes of fire exposure, complying with the standard time-temperature curve of ASTM E 119 or UL 263. The thermal barrier shall be installed in such a manner that it will remain in place for 15 minutes based~~

~~on FM 4880, UL 1040, NFPA 286 or UL 1715~~. The thermal barrier material shall comply with 2603.4.1 or 2603.4.2. Combustible concealed spaces shall comply with Section 717.

2603.4.1 Temperature transmission and integrity. The thermal barrier material shall comply with the requirements of the temperature transmission fire test and of the integrity fire test in NFPA 275, Standard Method of Fire Tests for the Evaluation of Thermal Barriers Used Over Foam Plastic Insulation.

2603.4.2 Temperature transmission and conditions of acceptance. The thermal barrier material shall comply with the temperature transmission test in NFPA 275 and with the conditions of acceptance of FM 4880, UL 1040 or UL 1715 when tested in conjunction with the foam plastic insulation for a period of 15 minutes.

~~2603.4.1~~ 2603.4.3 Thermal barrier not required. *(No change to text)*

(Renumber subsequent sections)

2. Add new standard to Chapter 35

NFPA 275-08	Standard Method of Fire Tests for the Evaluation of Thermal Barriers Used Over Foam Plastic Insulation, 2009 Edition

Reason: NFPA 275 was specifically developed to clarify the test for thermal barrier materials to be used over foam plastic insulation. It contains two tests.

The temperature transmission fire test in NFPA 275 uses the ASTM E 119 (or UL 263) time-temperature fire curve to expose the thermal barrier specimen and it requires the following: "4.8.1 During the 15-minute test period, the average measured temperature rise above the average temperature at the start of the fire test for the thermocouples described in Section 4.3 shall not exceed 250°F (139°C), and the measured temperature rise of any such single thermocouple shall not exceed 325°F (181°C)." Therefore, the temperature transmission fire test in NFPA 275 corresponds to what the code requires now.

The integrity fire test in NFPA 275 requires that the thermal barrier material, together with the foam plastic insulation, be tested to NFPA 286 (which is a 15 minute test) and that the pass/fail criteria are identical to those used for NFPA 286 elsewhere in the code (for example Chapter 8). NFPA 275 explains that when thermal barriers are to be used over MCM, the test specimen must contain the MCM at the maximum thickness intended for use.

The code recognizes at present that thermal barrier materials tested, in conjunction with MCM, to UL 1715 and complying with the conditions of acceptance of this test is acceptable. It should continue to do so. NFPA 275 also states that the integrity fire test can be conducted in accordance with UL 1715 if its pass/fail criteria are used.

With regard to MCM, the code, in section 1407.10.2 recognizes at present that thermal barrier materials tested, in conjunction with MCM, to UL 1715 and complying with the conditions of acceptance of this test, are acceptable. It should continue to do so. NFPA 275 also states that the integrity fire test can be conducted in accordance with UL 1715 if the pass/fail criteria of UL 1715 are used.

With regard to foam plastics, the code recognizes, in section 2603.4, that thermal barrier materials tested, in conjunction with foam plastic insulation, to FM 4880, UL 1040 and UL 1715 and complying with the conditions of acceptance of these tests are equally acceptable. It should also continue to do so. NFPA 275 also states that the integrity fire test can be conducted in accordance with the UL 1715, UL 1040 and FM 4880 alternate test methods, if the pass/fail criteria of those test methods are used.

Note that there is an error in unit conversion in the code since the actual equivalent in degrees centigrade of a temperature rise of 250 ºF is 139 ºC. The equivalent of 250 ºF actual temperature is 121 ºC. This becomes a moot point since the relevant information will now be contained within NFPA 275.

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

Analysis: Code change proposal FS160 and FS161 address thermal barrier requirements. The committee needs to make its intent clear with respect to these provisions. Standards FM 4480, UL 1040 and UL 1715 are currently referenced in the I-codes. A review of the standard(s) proposed for inclusion in the code, NFPA 275-08, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: HIRSCHLER-FS8-2603.4

FS162–09/10
1407.10.3

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

Revise as follows:

1407.10.3 Thermal barrier not required. The thermal barrier specified for MCM in Section 1407.10.2 is not required where:

1. The MCM system is specifically approved based on tests conducted in accordance with NFPA 286 (with the acceptance criteria of Section 803.1.2.1), UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.
2. The MCM is used as elements of balconies and similar projections, architectural trim or embellishments.

Reason: The code recognizes that NFPA 286 is an acceptable test for assessing the fire performance of materials that cannot be properly tested in accordance with ASTM E 84. In fact, NFPA 286 is a more modern test than UL 1715 or UL 1040.
There are three key differences between UL 1715 and NFPA 286: (a) the ignition source is a wood crib in UL 1715 and a gas burner in NFPA 286; (b) NFPA 286 lines the material fully on all three walls and the ceiling of the room while in UL 1715 wall lining is only partial and (c) the pass fail criteria or UL 1715 are qualitative ("During the test, the test specimen shall not project flame through the doorway opening at any time, and flames shall not extend to the extremities of the specimen. The char pattern shall show a decreasing char layer as measured from the fire source to the extremities."), while those for NFPA 286 are contained in the code (in 803.1.2.1) and include heat release, flame spread and smoke (as shown below).

This clearly indicates that a material that complies with the pass fail criteria in the IBC for NFPA 286 will pass the criteria for UL 1715 and therefore NFPA 286 should be allowed as an alternate test. In fact, acceptability for NFPA 286 as an alternate test to UL 1715 is already in the code in 2603.4 and in 2603.9.

This code proposal does not make any changes to the acceptability of materials tested to UL 1715 or to UL 1040.

IBC 803.1.2.1 Acceptance criteria for NFPA 286. During the 40 kW exposure, the interior finish shall comply with Item 1. During the 160 kW exposure, the interior finish shall comply with Item 2. During the entire test, the interior finish shall comply with Items 3 and 4.
1. During the 40kW exposure, flames shall not spread to the ceiling.
2. During the 160 kW exposure, the interior finish shall comply with the following:
2.1. Flame shall not spread to the outer extremity of the sample on any wall or ceiling.
2.2. Flashover, as defined in NFPA 286, shall not occur.
3. The peak rate of heat release throughout the NFPA 286 test shall not exceed 800 kW.
4. The total smoke released throughout the NFPA 286 test shall not exceed 1,000 m^2.

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

Analysis: Standard NFPA 286 is currently referenced in the I-codes.

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

ICCFILENAME: HIRSCHLER-FS5-1407.10.3.doc

FS163–09/10
1407.11,1407.11.3 (New) through 1407.11.4.4 (New)

Proponent: Rick Thornberry, PE, The Code Consortium, Inc., representing Alcan Composites USA, Inc.

1. Revise as follows:

1407.11 Alternate conditions. MCM and MCM systems shall not be required to comply with Sections 1407.10.1 through 1407.10.4 provided such systems comply with Section 1407.11.1, ~~or~~ 1407.11.2, 1407.11.3 or 1407.11.4.

2. Add new text as follows:

1407.11.3 Installations up to 75 feet in height (Option 1). MCM shall not be installed more than 75 feet (22 860 mm) in height above grade plane where installed in accordance with Sections 1407.11.3.1 through 1407.11.3.5.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be exempt from the height limitation.

1407.11.3.1 Prohibited occupancies. MCM shall not be permitted on buildings classified as Group A-1, A-2, H, I-2 or I-3 occupancies.

1407.11.3.2 Non-fire-resistance-rated exterior walls. MCM shall not be permitted on exterior walls required to have a fire-resistance-rating by other provisions of this code.

1407.11.3.3 Specifications. MCM shall be required to comply with all of the following:

1. MCM shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929.

2. MCM shall have a smoke-developed index of not more than 450 when tested in the maximum thickness intended for use in accordance with ASMT E 84 or UL 723 or a maximum average smoke density rating not greater than 75 when tested in the maximum thickness intended for use in accordance with ASTM D 2843.
3. MCM shall conform to one of the following combustibility classifications when tested in accordance with ASTM D 635:

   Class CC1: Materials that have a burning extent of 1 inch (25 mm) or less when tested at a nominal thickness of 0.060 inch (1.5 mm) or in the thickness intended for use.

   Class CC2: Materials that have a burning rate of 2 ½ inches per minute (1.06 mm/s) or less when tested at a nominal thickness of 0.060 inch (1.5 mm) or in the thickness intended for use.

1407.11.3.4 Area limitation and separation. The maximum area of a single MCM panel and the minimum vertical and horizontal separation requirements for MCM panels shall be as provided for in Table 1407.11.3.4. The maximum percentage of exterior wall area of any story covered with MCM panels shall not exceed that indicated in Table 1407.11.3.4 or the percentage of unprotected openings permitted by Section 705.8, whichever is smaller.

Exception: In buildings provided with flame barriers complying with Section 705.8.5 and extending 30 inches (760 mm) beyond the exterior wall in the plane of the floor, a vertical separation shall not be required at the floor other than that provided by the vertical thickness of the flame barrier.

1407.11.3.5 Automatic sprinkler system increases. Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the maximum percentage area of exterior wall of any story covered with MCM panels and the maximum square footage of a single area of MCM panels in Table 1407.11.3.4 shall be increased 100 percent. The area of MCM panels shall not exceed 50 percent of the exterior wall area of any story or the area permitted by Section 704.8 for unprotected openings, whichever is smaller.

TABLE 1407.11.3.4
AREA LIMITATION AND SEPARATION REQUIREMENTS FOR MCM PANELS

FIRE SEPARATION DISTANCE (feet)	COMBUSTIBILITY CLASS OF MCM	MAXIMUM PERCENTAGE AREA OF EXTERIOR WALL COVERED WITH MCM PANELS	MAXIMUM SINGLE AREA OF MCM PANELS (square feet)	MINIMUM SEPARATION OF MCM PANELS (feet)	
				Vertical	Horizontal
Less than 6	---	Not Permitted	Not Permitted	---	---
6 or more but less than 11	CC1	10	50	8	4
	CC2	Not Permitted	Not Permitted	---	---
11 or more but less than or equal to 30	CC1	25	90	6	4
	CC2	15	70	8	4
More than 30	CC1	50	Not Permitted	3[a]	0
	CC2	50	100	6[a]	3

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.

a. For reductions in the minimum vertical separation, see Section 1407.11.3.4.

1407.11.4 Installations up to 75 feet in height (Option 2). MCM shall not be installed more than 75 feet (22 860 mm) in height above grade plane where installed in accordance with Sections 1407.11.4.1 through 1407.11.4.4.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be exempt from the height limitation.

1407.11.4.1 Minimum fire separation distance. MCM shall not be installed on any wall with a fire separation distance less than 30 feet (9 144 mm).

Exception: Where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the fire separation distance shall be permitted to be reduced to not less than 20 feet (6 096 mm).

1407.11.4.2 Specifications. MCM shall be required to comply with all of the following:

1. MCM shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929.
2. MCM shall have a smoke-developed index of not more than 450 when tested in the maximum thicknesses intended for use in accordance with ASMT E 84 or UL 723 or a maximum average smoke density rating not greater than 75 when tested in the maximum thicknesses intended for use in accordance with ASTM D 2843.
3. MCM shall conform to one of the following combustibility classifications when tested in accordance with ASTM D 635:

   Class CC1: Materials that have a burning extent of 1 inch (25 mm) or less when tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use.

   Class CC2: Materials that have a burning rate of 2 ½ inches per minute (1.06 mm/s) or less when tested at a nominal thickness of 0.060 inch (1.5 mm), or in the thickness intended for use.

1407.11.4.3 Area and size limitations. The aggregate area of MCM panels shall not exceed 25 percent of the area of any exterior wall face of the story on which it is installed. The area of a single MCM panel installed above the first story above grade plane shall not exceed 16 square feet (1.5 m^2) and the vertical dimension of a single MCM panel shall not exceed 4 feet (1219 mm).

Exception: Where the building is equipped throughout with an automatic sprinkler system is provided throughout in accordance with Section 903.3.1.1, the maximum aggregate area of MCM panels shall be increased to 50 percent of the exterior wall face of the story on which it is installed and there shall not be a limit on the maximum dimension or area of a single MCM panel.

1407.11.4.4 Vertical separations. Flame barriers complying with Section 705.8 and extending 30 inches (762 mm) beyond the exterior wall or a vertical separation of not less than 4 feet (1219 mm) in height shall be provided to separate MCM panels located on the exterior walls at one story intervals.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Reason: This code change proposal is a follow up to Code Change FS184-06/07 which we had also submitted on behalf of Alcan Composites USA, Inc. for a previous code development cycle. However, that code change simply provided a direct reference to the light-transmitting plastic Sections (Sections 2607 and 2608) in Chapter 26 with a statement that the MCM panels should be substituted for the light-transmitting plastic wall panels or glazing in those sections. The Comamittee at that time recommended disapproval of the code change because they basically thought it would create confusion by referring to Chapter 26 without more clear guidance on how the MCM panels would replace the light-transmitting plastic wall panels or glazing. But the Committee did indicate that the concept was fine although they thought it would be preferable to bring the provisions from Chapter 26 into Chapter 14 instead of referring to Chapter 26. So that is what this code change proposal has done to respond to the Committee's concerns at that time.

This code change proposal provides for additional alternate conditions under which MCM and MCM systems can be installed on buildings greater than 50 feet in height. Two conditions are allowed which are based on the allowable use of light-transmitting plastics in the exterior walls of buildings in accordance with Section 2607 Light-transmitting Plastic Wall Panels and Section 2608 Light-transmitting Plastic Glazing. These two sections have been in the International Building Code (IBC) since its inception and were basically contained in all three of the legacy model building codes for many years prior to the development of the IBC. Thus, they have a long history of successful fire performance under the previous legacy codes, as well as under the IBC.

It is our belief that if exposed light-transmitting plastics can be used on the exterior walls of buildings under the provisions indicated in those sections, it is reasonable to expect that MCMs which contain a solid plastic core covered by a metal skin, such as aluminum or steel, should perform as well or better. It should be noted that the MCM meet all the requirements necessary to be an approved plastic which is also the requirement for light-transmitting plastics. And the MCM must meet an even more stringent burning limitation than light-transmitting plastics since MCMs are required to be tested in accordance with ASTM E84 or UL 723 to demonstrate a flame spread index not greater than 75 and a smoke-developed index not greater than 450.

Furthermore, it should be noted that the legacy evaluation services evaluated several manufacturers' MCMs based on meeting the criteria for approved light-transmitting plastics and their applications for both wall panels and glazing under the conditions previously allowed for those plastics by the legacy model codes. Those evaluation reports were based on the same concept that the MCMs would perform under fire conditions as well or better than the light-transmitting plastics allowed to be used in the exterior applications indicated above.

Alcan Composites USA, Inc. has a history of over 25 years of experience manufacturing and installing MCMs to meet those code requirements for light-transmitting plastics. To our knowledge, there has not been a fire involving the installation of their products that has resulted in unacceptable performance when installed in accordance with the code. Therefore, we respectfully request the Committee approve this code change proposal to allow for additional applications of MCMs on buildings greater than 50 feet in height.

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

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

ICCFILENAME: Thornberry-FS6-1407.11

FS164–09/10
1409 (New)

Proponent: Rick Thornberry, PE, Jesse J. Beitel, The Code Consortium, Inc., Hughes Associates, Inc., representing Trespa North America, Ltd.

1. Add new text as follows:

SECTION 1409
HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATES (HPL)

1409.1 General. The provisions of this section shall govern the materials, construction and quality of High-Pressure Decorative Exterior-Grade Compact Laminates (HPL) for use as exterior wall coverings in addition to other applicable requirements of Chapters 14 and 16.

1409.2 Exterior wall finish. HPL used as exterior wall covering or as elements of balconies and similar projections and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1409.4 and 1409.14.

1409.3 Architectural trim and embellishments. HPL used as architectural trim or embellishments shall comply with Sections 1409.7 through 1409.14.

1409.4 Structural design. HPL systems shall be designed and constructed to resist wind loads as required by Chapter 16 for components and cladding.

1409.5 Approval. Results of approved tests or an engineering analysis shall be submitted to the building official to verify compliance with the requirements of Chapter 16 for wind loads.

1409.6 Weather resistance. HPL systems shall comply with Section 1403 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.

1409.7 Durability. HPL systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1409 for the duration of use.

1409.8 Fire-resistance rating. Where HPL systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

> **Exception:** HPL systems not containing foam plastic insulation, which are installed on the outer surface of a fire-resistance-rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly, shall not be required to comply with this section.

1409.9 Surface-burning characteristics. Unless otherwise specified, HPL shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in the minimum and maximum thicknesses intended for use in accordance with ASTM E 84 or UL 723.

1409.10 Type I, II, III, and IV construction. Where installed on buildings of Type I, II, III and IV construction, HPL systems shall comply with Sections 1409.10.1 through 1409.10.4, or Section 1409.11.

1409.10.1 Surface-burning characteristics. HPL shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in the minimum and maximum thicknesses intended for use in accordance with ASTM E 84 or UL 723.

1409.10.2 Thermal barriers. HPL shall be separated from the interior of a building by an approved thermal barrier consisting of ½-inch (12.7 mm) gypsum wallboard or equivalent thermal barrier material that will limit the average temperature rise of the unexposed surface to not more than 250°F (121°C) after 15 minutes of fire exposure in accordance with the standard time-temperature curve of ASTM E 119 or UL 263. The thermal barrier shall be installed in such a manner that it will remain in place for not less than 15 minutes based on a test conducted in accordance with UL 1715.

1409.10.3 Thermal barrier not required. The thermal barrier specified for HPL in Section 1409.10.2 is not required where:

1. The HPL system is specifically approved based on tests conducted in accordance with UL 1040 or UL 1715. Such testing shall be performed with the HPL in the minimum and maximum thicknesses intended for use. The HPL system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.
2. The HPL is used as elements of balconies and similar projections, architectural trim or embellishments.

1409.10.4 Full-scale tests. The HPL system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the HPL system with the HPL in the minimum and maximum thicknesses intended for use.

1409.11 Alternate conditions. HPL and HPL systems shall not be required to comply with Sections 1409.10.1 through 1409.10.4 provided such systems comply with Section 1409.11.1 or 1409.11.2.

1409.11.1 Installations up to 40 feet in height. HPL shall not be installed more than 40 feet (12 190 mm) in height above grade plane where installed in accordance with Sections 1409.11.1.1 and 1409.11.1.2.

1409.11.1.1 Fire separation distance of 5 feet or less. Where the fire separation distance is 5 feet (1524 mm) or less, the area of HPL shall not exceed 10 percent of the exterior wall surface.

1409.11.1.2 Fire separation distance greater than 5 feet. Where the fire separation distance is greater than 5 feet (1524 mm), there shall be no limit on the area of exterior wall surface coverage using HPL.

1409.11.2 Installations up to 50 feet in height. HPL shall not be installed more than 50 feet (15 240 mm) in height above grade plane where installed in accordance with Sections 1409.11.2.1 and 1409.11.2.2.

1409.11.2.1 Self-ignition temperature. HPL shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929.

1409.11.2.2 Limitations. Sections of HPL shall not exceed 300 square feet (27.9 m^2) in area and shall be separated by a minimum 4 feet (1219 mm) vertically.

1409.12 Type V construction. HPL shall be permitted to be installed on buildings of Type V construction.

1409.13 Foam plastic insulation. HPL systems containing foam plastic insulation shall also comply with the requirements of Section 2603.

1409.14 Labeling. HPL shall be labeled in accordance with Section 1703.5.

2. Add new definitions as follows:

1402.1 General.

HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATE (HPL). Panels consisting of layers of cellulose fibrous material impregnated with thermosetting resins and bonded together by a high pressure process to form a homogeneous non-porous core suitable for exterior use.

HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATE (HPL) SYSTEM. An exterior wall covering fabricated using HPL in a specific assembly including joints, seams, attachments, substrate, framing and other details as appropriate to a particular design.

Reason: This code change proposes to add an entirely new Section 1409 titled “High-Pressure Decorative Exterior-Grade Laminates (HPL)” which specifies requirements for the installation of high-pressure decorative exterior-grade compact laminates (HPL) when used as exterior wall coverings. This proposed new section parallels Section 1407 on Metal Composite Materials (MCM) which pioneered the code provisions for combustible composite materials used as exterior wall coverings on buildings of all types of construction including Types I, II, III, and IV construction where the walls are required to be noncombustible. MCM complying with Section 1409 have an excellent fire performance record in the field. We believe the basic requirements contained in that section would also be appropriate for regulating HPL to provide the same excellent level of fire safety performance. Trespa North America, Ltd. has conducted tests of its high-pressure decorative exterior-grade compact laminates in accordance with of the provisions of this proposed new section. These tests have demonstrated that Trespa’s exterior wall coverings meet, and even exceed, those requirements including the full-scale fire testing conducted in accordance with NFPA 285.

This code change also contains new definitions for “High-Pressure Decorative Exterior-Grade Compact Laminate (HPL)” and “High-Pressure Decorative Exterior-Grade Compact Laminate (HPL) System” consistent with the definitions for “MCM” and “MCM System.” They are based on the International Standard EN 438.

These systems have been used successfully throughout Europe for the last 35 years with even less fire safety regulations than those proposed in this code change. They are now finding their way into the United States and have gained wide acceptance from the architectural community as being desirable exterior wall claddings for buildings under many different applications including high-rise buildings. These high-pressure decorative exterior-grade compact laminates have been developed in accordance with the International Standard EN 438-2005 High-Pressure Decorative Laminates Part 6 Classification and Specification for Exterior-Grade Compact Laminates of Thickness 2 mm and Greater which specifies the classification, quality, performance and testing of high-pressure decorative exterior-grade compact laminates and Part 7 Compact Laminate and HPL Composite Panels for Internal and External Wall and Ceiling Finishes.

It should also be noted that Trespa North America, Ltd. is not the only manufacturer of these laminates. In fact, Trespa is a member of the International Committee of the Decorative Laminate Industry (ICDLI) which has been in existence for more than 40 years. Currently, there are 14 international members of the ICDLI and of those, 8 manufacture high-pressure decorative exterior-grade compact laminates. So this is certainly not a proprietary code change proposal. More information on the ICDLI can be found by going to their website at www.icdli.com. Of most interest would be the ICDLI Product Data Sheet for High-Pressure Laminates (HPL) dated August, 2008.

Trespa North America, Ltd. testing experience to date, as well as field experience with HPL installations, has shown that its high-pressure decorative exterior-grade compact laminates and systems perform as well as, and even better than, some of the MCM panels and systems currently allowed and regulated by Section 1407. Therefore, we believe it is appropriate to include this new Section 1409 on high-pressure decorative exterior-grade compact laminates (HPL) in the International Building Code at this time.

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

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

ICCFILENAME: Thornberry-Beitel-FS10-1409

FS165–09/10
2603.3

Proponent: Mike Ennis, representing Single Ply Roofing Industry (SPRI, Inc.)

Revise as follows:

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

Exceptions:

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

Reason: The exceptions for this section appear to relate to both flame spread and smoke-developed indexes. Testing used to provide Fire Classifications A, B and C evaluate the potential for flame spread when the roof assembly is exposed to a topside fire source. UL 1256 and FM 4450 evaluate fire spread potential when the roof assembly is exposed to a fire source from below. By conducting these tests the flame spread of the roofing assembly containing the foam plastic insulation has already been evaluated. There is no need to have additional flame spread requirements for the foam plastic insulation.

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

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

ICCFILENAME: ENNIS-FS1-2603_3

FS166–09/10
2603.4.1.5, 2603.6

Proponent: Tony Crimi, AC Consulting Solutions Inc., representing North American Insulation Manufacturers Association

Revise as follows:

2603.4.1.5 Roofing. Foam plastic insulation under a roof assembly or roof covering having a smoke-developed index of not more than 450, and ~~that is~~ installed in accordance with the code and the manufacturer's instructions shall be separated from the interior of the building by wood structural panel sheathing not less than 0.47 inch (11.9 mm) in thickness bonded with exterior glue, with edges supported by blocking, tongue-and-groove joints or other approved type of edge support, or an equivalent material. A thermal barrier is not required for foam plastic insulation that is a part of a Class A,B or C roof-covering assembly, provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256.

2603.6 Roofing. Foam plastic insulation meeting the requirements of Sections 2603.2, 2603.3 and 2603.4 and having a smoke-developed index of not more than 450, shall be permitted as part of a roof-covering assembly, provided the assembly with the foam plastic insulation is a Class A, B or C roofing assembly where tested in accordance with ASTM E 108 or UL 790.

Reason: Fires in roofing materials can occur during installation or maintenance of roofing, during the normal course of operations, or during maintenance and installation of building equipment. While ASTM E108 and UL 790 are a means of evaluating fire spread, they do not measure smoke production.

Although roofing materials are installed on the exterior of a building, the smoke from burning roof insulations can be a hazard to both firefighters and the environment. Combustible smoke and off-gassing from combustible insulating materials pose a serious risk to building occupants and firefighters. Excessive quantities of smoke emanating from burning roofing materials also prevent effective firefighting operations, potentially delay response times or the effectiveness of fire fighting operations. There are also documented cases of fires starting in roofing materials causing sprinklers inside the building to activate and cause additional property damage.

Even when a fire is contained within the building, sufficient heat can be generated through a metal roof deck to cause smoldering combustion and smoke release. While a smoke developed index of 450 is consistent with some interior applications, it still represents a limit which most foam plastic insulations can conform with.

Several foam plastic insulation products have direct-to-steel-deck approvals from both FM and UL. FM approval for Class 1 roof systems based on passing FM 4450 and UL 1256. Both of these tests are specifically referenced in the IBC. The International Building Code (IBC) already waives the requirements for a thermal barrier for foam plastic roof insulation used in roof deck construction that complies with FM 4450 or UL 1256. Some minimum smoke developed rating should be maintained.

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

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

ICCFILENAME: CRIMI FS9 AND FS10

FS167–09/10
2603.4.1.5, 2603.4.1.5.1, 2603.4.1.5.2

Proponent: Mike Ennis, Single Ply Roofing Industry (SPRI), representing the Single Ply Roofing Industry (SPRI)

Revise as follows:

2603.4.1.5 Roofing. Foam plastic insulation under a roof assembly or roof covering shall comply with Sections 2603.4.1.5.1 and 2603.4.1.5.2 as applicable.

2603.4.1.5.1 Wood roof decks. A thermal barrier is not required for foam plastic insulation that is part of a Class A, B or C roof-covering assembly, provided the assembly ~~under a roof assembly or roof covering that~~ is installed in accordance with the code and the manufacturer's instructions and is ~~shall be~~ separated from the interior of the building by wood structural panel sheathing not less than 0.47 inch (11.9 mm) in thickness bonded with exterior glue, with edges supported by blocking, tongue-and-groove joints or other approved type of edge support, or an equivalent material.

2603.4.1.5.2 Any roof deck. A thermal barrier is not required for foam plastic insulation that is part of a Class A, B or C roof-covering assembly, provided the assembly with the foam plastic insulation satisfactorily passes FM 4450 or UL 1256.

Reason: The proposed wording is offered to clarify when the two exceptions for a thermal barrier in Section 2603.4.1.5 are applicable. The first sentence in the current version 2603.4.1.5 is only applicable when a wood roof deck is used. The second sentence is applicable for any type of roof deck. The proposed wording provides clarification without changing the intent.

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

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

ICCFILENAME: ENNIS-FS2-2603.4.1.5

FS168–09/10
2603.4.1.6; IRC R316.5.3, R316.5.4

Proponent: Jesse J. Beitel, Hughes Associates, Inc. representing The Extruded Polystyrene Foam Association

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTTIVE HEARING ORDERS FOR THESE COMMITTEES.
PART I – IBC FIRE SAFETY

Revise as follows:

2603.4.1.6 Attics and crawl spaces. Within an attic or crawl space where entry is made only for service of utilities, and where there is no direct air circulation between the attic or crawl space and the interior of the building, foam plastic insulation shall be protected against ignition by 1 $^1/_2$-inch-thick (38 mm) mineral fiber insulation; $^1/_4$-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard; $^3/_8$-inch (9.5 mm) gypsum wallboard, corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4 mm) or other approved material installed in such a manner that the foam plastic insulation is not exposed. The protective covering shall be consistent with the requirements for the type of construction.

PART II – IRC BUILDING/ENERGY

Revise as follows:

R316.5.3 Attics. The thermal barrier specified in Section R316.4 is not required where all of the following apply:

1. *Attic* access is required by Section R807.1.
2. The space is entered only for purposes of repairs or maintenance.
3. There is no direct air circulation between the attic space and the interior of the building.
~~3~~ 4. The foam plastic insulation is protected against ignition using one of the following ignition barrier materials:
   - ~~3.1~~ 4.1. $1^1/_2$-inch-thick (38 mm) mineral fiber insulation;
   - ~~3.2~~ 4.2. $^1/_4$-inch-thick (6.4 mm) wood structural panels;
   - ~~3.3~~ 4.3. $^3/_8$-inch (9.5 mm) particleboard;
   - ~~3.4~~ 4.4. $^1/_4$-inch (6.4 mm) hardboard;
   - ~~3.5~~ 4.5. $^3/_8$-inch (9.5 mm) gypsum board; or
   - ~~3.6~~ 4.6. Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm).

The above ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R316.6.

R316.5.4 Crawl spaces. The thermal barrier specified in Section R316.4 is not required where all of the following apply:

1. Crawlspace access is required by Section R408.4
2. Entry is made only for purposes of repairs or maintenance.
3. There is no direct air circulation between the crawl space and the interior of the building.
~~3~~ 4. The foam plastic insulation is protected against ignition using one of the following ignition barrier materials:
   - ~~3.1~~ 4.1. $1^1/_2$-inch-thick (38 mm) mineral fiber insulation;
   - ~~3.2~~ 4.2. $^1/_4$-inch-thick (6.4 mm) wood structural panels;
   - ~~3.3~~ 4.3. $^3/_8$-inch (9.5 mm) particleboard;
   - ~~3.4~~ 4.4. $^1/_4$-inch (6.4 mm) hardboard;

~~3.5~~ 4.5. $^3/_8$-inch (9.5 mm) gypsum board; or
~~3.6~~ 4.6. Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm).

The above ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R316.6.

Reason: This Section of the Code was developed in the mid 1970's, to recognize that there was limited potential fire exposure to foam plastics in these areas of a building. Thus, the foam is allowed to be protected by an ignition barrier instead of the usual thermal barrier. Also, at that time, attics and crawl spaces were vented to the outside and since there was no direct communication between attics or crawl spaces and the interior of the buildings, the movement of smoke was not a potential issue.

In today's buildings, there may be direct communication between crawl spaces and possibly attics and the interior of the building. Thus, if the foam plastic becomes involved in a fire, smoke can migrate into the building sooner than if the foam plastic was covered by a thermal barrier.

This Code proposal addresses this issue such that if the foam plastic is covered by an ignition barrier, there can be no direct air circulation to the interior of the building. As with all foam plastics, if the foam is protected by a thermal barrier, then it can be used anywhere in the building per Section 2603.4. This proposal provides an increase in life safety for the occupants of the building.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC BUILDING/ENERGY

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

ICCFILENAME: BEITEL-FS9-2603.4.1.6 PART I AND BEITEL-RB3-R316.5.3 PART II

FS169–09/10
2603.4.1.6; IRC R316.5.3, R316.5.4

Proponent: Ted Grant, Atlas Roofing Corporation, representing Atlas Roofing Corporation

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THESE COMMITEES.

PART I – IBC FIRE SAFETY

Revise as follows:

2603.4.1.6 Attics and crawl spaces. Within an *attic* or crawl space where entry is made only for service of utilities, foam plastic insulation shall be protected against ignition by 1½-inch-thick (38 mm) mineral fiber insulation; ¼-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard; $^3/_8$-inch (9.5 mm) gypsum wallboard, corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4 mm)<u>; inorganic coated glass mat having a thickness not less than 0.016 inch (0.406 mm) and ash test results greater than 85 wt/wt%,</u> or other approved material installed in such a manner that the foam plastic insulation is not exposed. The protective covering shall be consistent with the requirements for the type of construction.

PART II – IRC BUILDING/ENERGY

Revise as follows:

R316.5.3 Attics. The thermal barrier specified in Section R316.4 is not required where all of the following apply:
1. *Attic* access is required by Section R807.1.
2. The space is entered only for purposes of repairs or maintenance.
3. The foam plastic insulation is protected against ignition using one of the following ignition barrier materials:
   3.1. 1½-inch-thick (38 mm) mineral fiber insulation;
   3.2. ¼-inch-thick (6.4 mm) wood structural panels;
   3.3. $^3/_8$-inch (9.5 mm) particleboard;
   3.4. ¼-inch (6.4 mm) hardboard;

3.5. $^3/_8$-inch (9.5 mm) gypsum board; ~~or~~
3.6. Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm); or
3.7. Inorganic coated glass mat having a thickness not less than 0.016 inch (0.406 mm) and ash test result greater than 85 wt/wt%.

The above ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R316.6.

R316.5.4 Crawl spaces. The thermal barrier specified in Section R316.4 is not required where all of the following apply:

1. Crawlspace access is required by Section R408.4
2. Entry is made only for purposes of repairs or maintenance.
3. The foam plastic insulation is protected against ignition using one of the following ignition barrier materials:
   3.1. 1½-inch-thick (38 mm) mineral fiber insulation;
   3.2. ¼-inch-thick (6.4 mm) wood structural panels;
   3.3. $^3/_8$-inch (9.5 mm) particleboard;
   3.4. ¼-inch (6.4 mm) hardboard;
   3.5. $^3/_8$-inch (9.5 mm) gypsum board; ~~or~~
   3.6. Corrosion-resistant steel having a base metal thickness of 0.016 inch (0.406 mm); or
   3.7. Inorganic coated glass mat having a thickness not less than 0.016 inch (0.406 mm) and ash test results greater than 85 wt/wt%.

The above ignition barrier is not required where the foam plastic insulation has been tested in accordance with Section R316.6.

Reason: Inorganic coated glass mats are referred to as slip sheets in the commercial roofing industry, and are used as ignition barriers to prevent the roof insulation from catching fire in the event of hot embers or other fire exposure. The inorganic coated glass mats are composed of drywall-like compounds over glass mat, and are approved by Underwriters Laboratories and Factory Mutual in many roofing constructions as replacements for ½" gypsum cover boards. They are available in rolls and can thus be easily installed inside crawl spaces or attics with complete coverage over the insulation as well as the roof or floor joists. Allowing this ignition barrier to be used in attics and crawl spaces will provide another option to end users where sheet products may not be feasible and 1-1/2" mineral fiber insulation may not be desirable.

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

PART I – IBC FIRE SAFETY

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

PART II – IRC

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

ICCFILENAME: GRANT-FS1-2306.4.1.6

FS170–09/10
2603.4

Proponent: Jeff Inks, representing the Window and Door Manufacturers Association (WDMA)

Revise as follows:

2603.4.1.7 Doors not required to have a fire protection rating. Where pivoted or side-hinged doors are permitted without a fire protection rating, foam plastic insulation, having a flame spread index of 75 or less and a smoke-developed index of not more than 450, shall be permitted as a core material ~~where the door facing is of metal having a minimum thickness of 0.032-inch (0.8 mm) aluminum or steel having a base metal thickness of not less than 0.016 inch (0.4 mm) at any point.~~ provided the door is faced with aluminum, steel, fiberglass, wood or other approved material.

2603.4.1.8 Exterior doors in buildings of Group R-2 or R-3. In occupancies classified as Group R-2 or R-3, foam-filled exterior entrance doors to individual *dwelling units* that do not require a fire-resistance rating shall be faced with aluminum, steel, fiberglass, wood or other approved materials.

Reason: The language above is unchanged since at least the 2000 IBC. However, insulated side-hinged doors with facing materials other than aluminum or steel have become widely accepted in the market and without demonstrated issues. In addition, the specified minimum thickness text proposed to be deleted is not needed because durability requirements of doors results in facing material significantly thicker than the specified thickness.

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

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

ICCFILENAME: WOESTMAN-FS1-2603.4.1.7

FS171–09/10
2603.4.1.14; IRC R316.5.13

Proponent: Jesse J. Beitel, Hughes Associates, Inc. representing The Extruded Polystyrene Foam Association

THIS IS A 2 PART PROPOSAL. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IBC FIRE SAFETY

Add new text as follows:

2603.4.1.14 Floors. The thermal barrier specified in Section 2603.4 is not required to be installed on the walking surface of a structural floor system that contains foam plastic insulation when the foam plastic is covered by a minimum nominal ½-inch (12.7 mm) thick wood structural panel or equivalent. The thermal barrier specified in Section 2603.4 is required on the underside of the structural floor system that contains foam plastic insulation when the underside of the structural floor system is exposed to the interior of the building.

Exception: Foam plastic used as part of an interior floor finish.

(Renumber subsequent section)

PART II – IRC BUILDING/ENERGY

Add new text as follows:

R316.5.13 Floors. The thermal barrier specified in Section R316.4 is not required to be installed on the walking surface of a structural floor system that contains foam plastic insulation when the foam plastic is covered by a minimum nominal ½-inch (12.7 mm) thick wood structural panel or equivalent. The thermal barrier specified in Section R316.4 is required on the underside of the structural floor system that contains foam plastic insulation when the underside of the structural floor system is exposed to the interior of the building.

Reason: In today's construction new types of products are being used which incorporate foam plastic insulation for energy reasons. One example is SIPS panels where the foam plastic is laminated between two structural wood facings. This type of panel can be used as a wall, floor or roof.

Foam plastic is required to be protected by a thermal barrier which typically is ½ inch gypsum wallboard. In the case of flooring, gypsum wallboard or other common thermal barrier materials cannot be used on the walking surfaces due to their friability to load, etc.

This Code proposal addresses this problem. The proposed requirement for the ½ inch thick plywood or equivalent will provide sufficient protection to the foam plastic insulation. While ½-inch plywood is not by itself a thermal barrier, in the case of a floor, it will provide sufficient protection since in the event of an interior fire, the floor is typically the last building element to be significantly exposed by the fire.

If the floor is used in multistory construction, then the underside of the floor system (ceiling of the room below) must be covered by the required thermal barrier.

An exception is added to the IBC to address items such as carpet padding, etc. that have not and do not need to be covered by a thermal barrier.

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

PART I – IBC FIRE SAFETY:

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

PART II – IRC BUILDING/COMMITTEE:

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

ICCFILENAME: BEITEL-FS8-2603.4.13; RB4-R316.5.13 PART II

FS172–09/10
2603.5.3, 2603.5.5, 2603.5.5.1 (New)

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

1. Delete without substitution:

~~**2603.5.3 Potential heat.** The potential heat of foam plastic insulation in any portion of the wall or panel shall not exceed the potential heat expressed in Btu per square feet (mJ/m2) of the foam plastic insulation contained in the wall assembly tested in accordance with Section 2603.5.5. The potential heat of the foam plastic insulation shall be determined by tests conducted in accordance with NFPA 259 and the results shall be expressed in Btu per square feet (mJ/m2).~~

~~**Exception:** One-story buildings complying with Section 2603.4.1.4.~~

(Renumber subsequent sections)

2. Revise as follows:

2603.5.5 Test standard<u>s</u>. The wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. <u>The potential heat of the foam plastic insulation shall be determined by tests conducted in accordance with NFPA 259 and the results shall be expressed in Btu per square feet (mJ/m2).</u>

Exception: One-story buildings complying with Section 2603.4.1.4.

3. Add new text as follow:

<u>**2603.5.5.1 Alternate Material.** An alternate foam plastic insulation is permitted to be used provided that the potential heat of the alternate material does not exceed the potential heat of the foam plastic insulation contained in the wall assembly tested in accordance with Section 2603.5.5.</u>

Reason: The proposed revisions are not technical and are intended for clarity only. All foam plastic insulation is currently required to be tested in accordance with NFPA 259. However, the existing text is confusing to the user as to how the results from the NFPA 259 test are related to the results of NFPA 285 test required by Section 2603.5.5. The new Section 2603.5.5.3.1 clarifies that a substitute material can be used provided that the potential heat of the substitute foam plastic is less than the potential heat of the foam plastic that was used in the NFPA 285 test.

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

Analysis: Standard NFPA 259 is currently referenced in the I-codes.

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

ICCFILENAME: BOECKER-FS2-2603.5.3

FS173–09/10
2603.5.6

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing Dow Chemical Company

Revise as follows:

2603.5.6 Label required. The edge or face of each piece<u>, package or container</u> of foam plastic insulation shall bear the label of an approved agency. The label shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the product or materials' performance characteristics and approved agency's identification.

Reason: When this Section was written, the typical foam plastic insulation materials used for exterior walls were delivered to the jobsite in sheets or panels. Thus, they were marked as required by the existing Code Section. Currently, different types of foam plastic insulations are being used in these applications. These foam plastics such as spray polyurethane foam are delivered to the job site in drums which contain the components of the foam plastic insulation and typically, materials from two drums are mixed as they are sprayed and the resultant foam plastic insulation is applied to the wall surfaces. The component (drums or packaging) bears a label with the information required in the Section.

This Code proposal provides recognition for these types of foam plastics and their packaging method (drums versus boards) and requires labeling per this section 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

ICCFILENAME: BEITEL-FS4-2603.5.6.doc

FS174–09/10
2603.7, 2603.8 (New)

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

Revise as follows:

2603.7 Interior Finish in plenums. ~~Foam plastic insulation shall not be used as interior wall or ceiling finish in plenums except as permitted in Section 2604 or when protected by a thermal barrier in accordance with Section 2603.4.~~ Foam plastic insulation used as interior wall or ceiling finish in plenums shall comply with one or more of the following:

1. The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 and shall exhibit a flame spread index of 75 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.
2. The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall meet the acceptance criteria of Section 803.1.2 when tested in accordance with NFPA 286.
3. The foam plastic insulation shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) and shall exhibit a flame spread index of 75 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.

2603.8 Interior trim in plenums. Foam plastic insulation used as interior trim in plenums shall comply with the requirements of Section 2603.7.

(Renumber subsequent sections)

Reason: This code proposal revises the requirements for use of foam plastic insulation as interior wall and ceiling finish or as interior trim in plenums. The IBC and IMC requirements for materials in plenums has always been that they be noncombustible or exhibit a flame spread index of 25 or less and a smoke developed index of 50 when tested to ASTM E 84. As presently written there is some confusion because the foam plastic insulation could be approved based on tests using any of the standards from 2603.9 (and only NFPA 286 has pass/fail criteria for smoke) and there is the additional potential for conflict between that section and the remainder of 2603. Moreover, as written interior trim could be used in plenums based on section 2604.2, which is unacceptable. This proposal requires that exposed foam plastic insulation (i.e. foam plastic left unprotected), whether used as interior finish or as interior trim, shall exhibit a flame spread index of 25 or less and a smoke developed index of 50 and meet the requirements of the full scale room-corner fire test (NFPA 286) with requirements for flame spread, heat release, no flashover and smoke release. Additionally, two alternatives are provided to protect foam plastics and thus allow them even when they have a higher flame spread index and smoke developed index, namely a thermal barrier and a corrosion-resistant steel barrier. This is also consistent with the requirements of NFPA 90A, which has the same requirements for foam plastic insulation used as interior finish in plenums.
A parallel proposal was submitted to the IBC, for consistency.

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

Analysis: Code change proposal FS174 and FS175 address foam plastic interior finish requirements. The committee needs to make its intent clear with respect to these provisions. Standards ASTM E84, UL 723 and NFPA 286 are currently referenced in the I-codes.

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

ICCFILENAME: HIRSCHLER-FS14-2603.7

FS175–09/10
2603.7

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing self

Delete and substitute as follows:

~~**2603.7 Plenums.** Foam plastic insulation shall not be used as interior wall or ceiling finish in plenums except as permitted in Section 2604 or when protected by a thermal barrier in accordance with Section 2603.4.~~
2603.7 Plenums. Foam plastic insulation used as wall or ceiling finish in plenums shall comply with one or more of the following:

1. The foam plastic insulation shall be separated from the plenum by a thermal barrier complying with Section 2603.4 and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.
2. The foam plastic insulation shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use and shall be tested in accordance with and meet the criteria of Section 803.1.2.
3. The foam plastic insulation shall be covered by corrosion-resistant steel having a base metal thickness of not less than 0.0160 inch (0.4 mm) and shall exhibit a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723 at the thickness and density intended for use.

Reason: This code proposal revises the requirements for use of foam plastics in plenums. The intent of the IBC and the IMC has been to require that all materials used in plenums shall be noncombustible or exhibit a flame spread index of 25 or less and a smoke-developed index of 50. The same criteria should also be applied to foam plastics used as wall or ceiling finish in plenums. This proposal requires that if the foam plastic is left unprotected then it shall exhibit a flame spread index of 25 or less and a smoke-developed index of 50 and meet the requirements of a full-scale fire test (NFPA 286). Additionally, several alternatives are provided to protect foam plastics and thus allow them to have a greater flame spread index and smoke-developed index.

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

Analysis: Code change proposal FS174 and FS175 address foam plastic interior finish 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: BEITEL-FS12-2603.7 NEW

FS176–09/10
2603.8; IRC R316.7, R318.4, R403.3.4, R404.1.2.3.6.1

Proponent: Todd Bergstrom, Ph.D., AFM Corporation, representing AFM Corporation

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IBC FIRE SAFETY COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE FIRE SAFETY COMMITTEE.

PART I – IBC FIRE SAFETY

Revise as follows:

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

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or preservative-treated wood.

2. An approved method of protecting the foam plastic and structure from subterranean termite damage is provided.
3. On the interior side of basement walls.

PART II – IRC BUILDING/ENERGY

Revise as follows:

R316.7 Termite damage. The use of foam plastics in areas of "very heavy" or "moderate to heavy" termite infestation probability shall be in accordance with Section R318.4.

R318.4 Foam plastic protection. In areas where the probability of termite infestation is "very heavy" or "moderate to heavy" as indicated in Figure R301.2(6), extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be at least 6 inches (152 mm).

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or pressure-preservative-treated wood.
2. When in addition to the requirements of Section R318.1, an approved method of protecting the foam plastic and structure from subterranean termite damage is used.
3. On the interior side of basement walls.

R403.3.4 Termite damage. The use of foam plastic in areas of "very heavy" or "moderate to heavy" termite infestation probability shall be in accordance with Section R318.4.

R404.1.2.3.6.1 Stay-in-place forms. Stay-in place concrete forms shall comply with this section.

1. Surface burning characteristics. The flame-spread index and smoke-developed index of forming material, other than foam plastic, left exposed on the interior shall comply with Section R302. The surface burning characteristics of foam plastic used in insulating concrete forms shall comply with Section R316.3.
2. Interior covering. Stay-in-place forms constructed of rigid foam plastic shall be protected on the interior of the building as required by Section R316. Where gypsum board is used to protect the foam plastic, it shall be installed with a mechanical fastening system. Use of adhesives in addition to mechanical fasteners is permitted.
3. Exterior wall covering. Stay-in-place forms constructed of rigid foam plastics shall be protected from sunlight and physical damage by the application of an approved exterior wall covering complying with this code. Exterior surfaces of other stay-in-place forming systems shall be protected in accordance with this code.
4. Termite hazards. In areas where hazard of termite damage is "very heavy" or "moderate to heavy" in accordance with Figure R301.2(6), foam plastic insulation shall be permitted below grade on foundation walls in accordance with one of the following conditions:
   4.1. Where in addition to the requirements in Section R318.1, an approved method of protecting the foam plastic and structure from subterranean termite damage is provided.
   4.2. The structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or pressure-preservative-treated wood.
   4.3. On the interior side of basement walls.

Reason:
Part I-Damage to foam plastic insulations installed below grade (and subsequently building structures) in termite regions of moderate to heavy probability (see Figure 2603.8) is an area of the IBS that provides the possibility for significant potential for damage. The use of alternative methods as provided by the Exception to 2603.8 are real solutions that help minimize the risk to structures and this should be extended to the moderate to heavy probability regions to protect the long term integrity of building structures.
Part II- Damage to foam plastic insulations installed below grade (and subsequently building structures) in termite regions of moderate to heavy probability [see Figure R301.2(6)] is an area of the IRC that leaves open the possibility for significant potential for damage to structures. The use of alternative methods as provided by the Exception to R318.4 are real solutions that help minimize the risk to structures and this should be extended to the moderate to heavy probability regions to protect the long term integrity of building structures

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

Part I – IBC FIRE SAFETY

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

Part II – IRC BUILDING/ENERGY

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

ICCFILENAME: BERGSTROM-FS1-2603.8

FS177–09/10
2603.8

Proponent: Steve Heller, representing the Insulating Concrete Form Association

Revise as follows:

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

Exceptions:

1. Buildings where the structural members of walls~~,~~ and floors~~, ceiling and roofs~~ are entirely of noncombustible materials or pressure-preservative-treated wood; or the exterior wall envelope is entirely monolithic concrete walls, including flat-wall and waffle grid ICFs, with continuous concrete from the footings to the roofline.
2. An approved method of protecting the foam plastic and structure from subterranean termite damage is provided.
3. On the interior side of basement walls.

Reason: This proposal acknowledges the protection of concrete construction from structural damage due to termites.

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

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

ICCFILENAME: HELLER-FS1-2603.8

FS178–09/10
2603.9

Proponent: Tony Crimi, A.C. Consulting Solutions Inc., representing North American Insulation Manufacturers Association

Revise as follows:

2603.9 Special approval. Foam plastic shall not be required to comply with the requirements of Sections 2603.4 through 2603.7 where specifically approved based on large-scale tests such as, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.2), FM 4880, UL 1040 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall also conform to the flame spread and smoke developed requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

Reason: At a minimum, the provision for special approvals for foamed plastics, which waives other requirements of Chapters 8 and 26 for foamed plastics needs to provide a comparable level of performance and safety to the existing provisions.

Justification: In the 2007 Supplement, additional language was introduced to 2603.9 to retain the flame spread requirements for interior finish materials, despite the fact that additional fire testing was required in 2603.9. With the exception of the performance criterion in 803.1.2 related to NFPA 286, the smoke developed requirements on foamed plastics arising from Chapters 7 & 8 are being waived, despite the fact that testing in accordance with FM 4880, UL 1040 and UL 1715 does not contain any smoke development criterion.

By requiring testing to be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use, the Code does not clearly include or exclude smoke development requirements. For all other thermal and sound insulating materials within the IBC, including non-combustible insulation materials, the minimum performance level for materials permitted to be used includes at least some requirements for both flame spread (fire growth) and smoke production. These requirements are primarily based on either ASTM E84 testing or alternative methods such as NFPA 286, CAN/ULC-S102.2, or even UL 1715 with the inclusion of the criterion from 803.1.2. However, in the case of foamed plastics, of the four alternative test methods permitted by 2603.9, only NFPA 286 contains any limits on smoke developed for any foamed plastics by virtue of the inclusion of a reference to section 803.1. The additional language proposed here covers this omission by using a widely accepted testing methodology of ASTM E84 and UL 723.

Further, by virtue of the language contained in article 2603.7 and Section 2604, foamed plastics are permitted to be installed in plenums without any limitations on the smoke development, and without requiring protection with a thermal barrier. Section 2603.9 permits foamed plastic insulation to be used as interior wall or ceiling finish in plenums even without the installation of a thermal barrier.

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

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

ICCFILENAME: CRIMI-FS11-2603.9

FS179–09/10

2603.9.1 (New)

Proponent: Jesse J. Beitel, Hughes Associates, Inc. representing The Extruded Polystyrene Foam Association

Add new text as follows:

2603.9 Special approval. Foam plastic shall not be required to comply with the requirements of Sections 2603.4 through 2603.7 where specifically approved based on large-scale tests such as, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.2), FM 4880, UL 1040 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall also conform to the flame spread requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

2603.9.1 Exterior walls. Testing based on Section 2603.9 shall not be used to eliminate any component of the construction of an exterior wall assembly when that component was included in the construction that has met the requirements of Section 2603.5.5.

Reason: Section 2603.5.5 of the IBC requires that when foam plastic insulation is used in or on an exterior wall, the NFPA 285 must be conducted on the wall assembly. In this test, typically one layer of gypsum wallboard is used to cover the interior surface of the wall assembly. See Figure 1.

Sections 2603.4 and 2603.5.2 of the IBC require that the foam plastic be separated from the interior of the building by a thermal barrier, typically gypsum wallboard. Section 2603.9 allows that when a foam plastic is successfully tested in a full-scale test such as NFPA 286, UL 1715, etc. then the thermal barrier can be eliminated.

A question has arisen in that if the gypsum wallboard is used to pass the NFPA 285 test, then can it be eliminated if the assembly also passes for example, an NFPA 286 test?

The NFPA 285 is a test in which the interior wall surface is exposed to the equivalent of an ASTM E 119 fire exposure for 30 minutes. This test evaluates vertical and lateral flame propagation away from the compartment of fire origin and the performance of the wall support system (i.e., steel studs, etc.) plays a significant role in the wall's performance.

The tests specified in Section 2603.9 evaluate the flame spread of a foam plastic when exposed to a fire of limited size and typically for on 15 minutes. These methods evaluate the flame spread potential of the foam plastic.

The NFPA 285 test evaluates different performance parameters than the Section 2603.9 test. Also, the exposure to the interior of the wall in the NFPA 285 is significantly more severe.

Thus, if the gypsum wallboard used in the successful performance of the NFPA 285 test is eliminated based on tests in Section 2603.9, then the support system for the wall may not perform since it is now unprotected, and the results of the NFPA 285 test may no longer be valid. In fact, the wall system without the gypsum wallboard could now fail the NFPA 285 test.

This Code change will clarify the intent of the Code with respect to this question by requiring that the specific assembly successfully tested in NFPA 285 be the assembly used for these applications in the field. Thus if a foam plastic assembly successfully passes a full-scale test such as NFPA 286, UL 1715, etc. to remove the thermal barrier, the same assembly (without the thermal barrier) must also pass the NFPA 285 to be used in commercial walls.

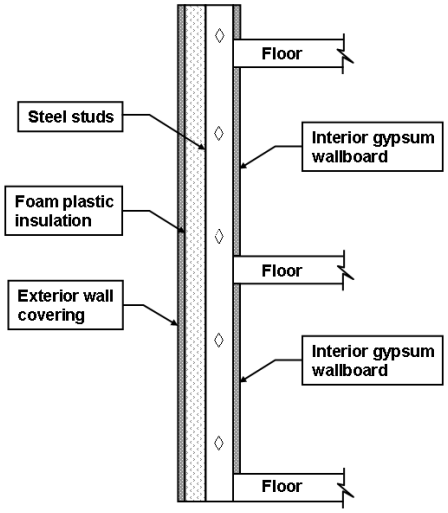


FIGURE 1

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

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

ICCFILENAME: BEITEL-FS10-2603.9

FS180–09/10
2606.5, 2609.1.1 (New), 2610.1.1 (New)

Proponent: J. Nigel Ellis, representing Ellis Fall Safety Solutions, LLC

THIS CODE CHANGE WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. SEE THE HEARING ORDER FOR THIS COMMITTEE.

1. Revise as follows:

2606.5 Structural requirements. Light-transmitting plastic materials in their assembly shall be of adequate strength and durability to withstand the loads indicated in Chapter 16. Technical data shall be submitted to establish stresses, maximum unsupported spans and such other information for the various thicknesses and forms used as deemed necessary by the *building official*. Every skylight shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides. Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 lbs applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than 4 inches long or of slatwork with openings not more than 2 inches wide with length unrestricted.

2. Add new text as follows:

2609.1 General. Light-transmitting plastic roof panels shall comply with this section and Section 2606. Light-transmitting plastic roof panels shall not be installed in Groups H, I-2 and I-3. In all other groups, light-transmitting plastic roof panels shall comply with any one of the following conditions:

1. The building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1.
2. The roof construction is not required to have a fire-resistance rating by Table 601.
3. The roof panels meet the requirements for roof coverings in accordance with Chapter 15.

2609.1.1 Guarding. Light-transmitting roof panels and assemblies shall be guarded as required by Section 2606.5.

3. Add new text as follows:

2610.1 Light-transmitting plastic glazing of skylight assemblies. Skylight assemblies glazed with light-transmitting plastic shall conform to the provisions of this section and Section 2606. Unit skylights glazed with light-transmitting plastic shall also comply with Section 2405.5.

Exception: Skylights in which the light-transmitting plastic conforms to the required roof-covering class in accordance with Section 1505.

2610.1.1 Guarding. Unit skylight assemblies shall be guarded as required by Section 2606.5.

Reason: The proposed wording is verbatim Federal OSHA standard from 1971 and needs to be reflected in the building code because Chapter 16 loading is inadequate for human falls onto skylights and skylight manufacturers are not the only users of the skylights they produce. In other words some building owners may not be employers who maintain the roof skylights and therefore need the protection from the manufacturers in each installation going forward with the inclusion or design integration of a necessary hazard control.

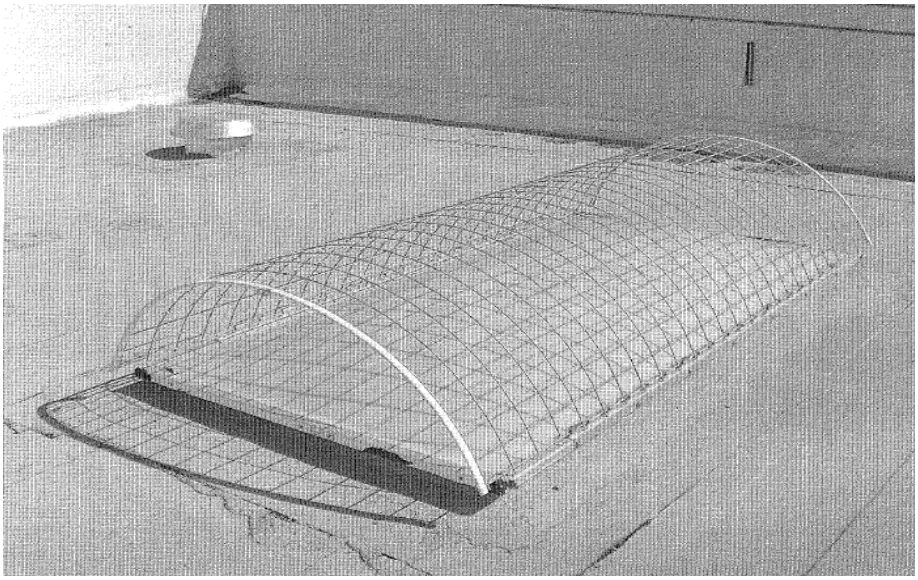
Fatalities from falls through skylights which category for inclusion includes light-transmitting panels and smoke vents are documented by the Bureau of Labor Statistics which in 2006 accounted for 36 deaths in non-government buildings in the USA www.bls.gov. Skylights have their own fatal fall category as opposed to roof or floor openings that also have their own listing. The Federal requirement for General Industry is 29CFR1910.23(a)(4) and (e)(8) which became mandatory in 1971 for employers.

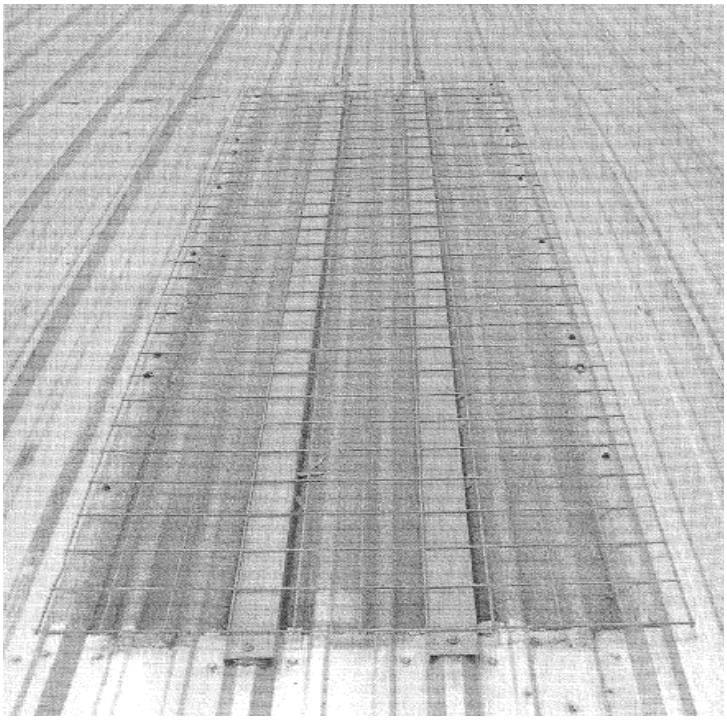
There are also similar requirements in the 1926.500-503 Construction regulations that equate skylights with open holes and require the use of adequate covers. The ANSI A1264.1 and A10.18 are similarly worded but all are aimed ineffectively at employers with exposed employees but not exposed independent contractors who visit dozens of building roofs each month without a feasible protection method e.g. HVAC, Laborers, roofers, Window Cleaners etc.).

However after 38 years not even 1% of skylights have the required screen protection. Ref Plasteco President Key Sandow. Skylight manufacturers do not mark their skylights clearly in the same way that auto glazers do, so that manufacturers may never know their skylight ever failed to support a falling worker. Instead, the blame falls on the injured person for not knowing to stay away from or be careful around skylights. My experience is that workers do not know the degree of danger stepping close to skylights until it is too late nor do their employers.

Plastic skylights may survive impacts from falling or tripping by the trades (of which there may be 25 or more) when new but almost all suffer from uv light degradation over the years. An alternative that also takes care of controlling intruders is under-skylight grills especially for opening smoke vents and similar skylights and corrosive conditions and sometimes both to reduce fall distances to 4 ft or less per OSHA General Industry requirements. Skylights are maintained today by sealing leaks with silicone, fiberglass or equivalent and appear in “good” condition on maintenance company reports to the building owner if they do not presently leak despite the fact that they have cracks after a few years in the sun and are patched regularly. There is no common lifetime for plastic skylights that may now be 50+ years old and users do not currently replace a skylight unless a leak cannot be stemmed.

The request is to include the federal requirement in the IBC Building Code and carry the responsibility to architects, engineers and building owners and managers to protect the work trades that maintain the roof systems in those buildings by including adequate protection in specifications. No building owner expects that a skylight will have a disastrously weak strength that a worker can step onto and through as the years progress eventually almost as easily as pushing a finger through. The OSHA interpretation by John Miles in 1984 does not anticipate the degradation that occurs with almost all synthetic-related skylights nor the dynamic force of a slip, trip and/or fall by a passing worker. Use of personal fall arrest is a last resort but no system is legal without a 5,000 lbs anchorage point which is simply unavailable on a roof unless designed by a structural engineer and regularly recertified (OSHA 1926.500-503 and ANSI Z359-2007 The Fall Protection Code) and building owners do not contract or pay for 5000 lbs anchors in their roofs or confirm roof strengths with any contractors at this time (ref: 1926.501(a)(2) adequate surface strength requirements). Examples of skylight screens follow:





Cost Impact: Approx. $300 including a 4'x8' skylight screen and installation

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

ICCFILENAME: ELLIS-FS1-2606.5

FS181–09/10
2610.2

Proponent: Ennis, representing the Single Ply Roofing Industry (SPRI))

Revise as follows:

2610.2 Mounting. The light-transmitting plastic shall be mounted above the plane of the roof on a curb constructed in accordance with the requirements for the type of construction classification, but at least 4 inches (102 mm) above the plane of the roof. ~~Edges of the light-transmitting plastic skylights or domes shall be protected by metal or other approved noncombustible material, or the~~ <u>The</u> light transmitting plastic dome or skylight shall be shown to be able to resist ignition where exposed at the edge to a flame from a Class B brand as described in ASTM E 108 or UL 790.

Exceptions:

1. Curbs shall not be required for skylights used on roofs having a minimum slope of three units vertical in 12 units horizontal (25-percent slope) in occupancies in Group R-3 and on buildings with a nonclassified roof covering.
2. ~~The metal or noncombustible edge material is not required where nonclassified roof coverings are permitted.~~

Reason: The flames of the Class B brand can extend above the noncombustible edge and contact the dome, allowing for the possibility of catching fire and test failure. ASTM E108 tests have been conducted on products with non-combustible edge material in which the flame extended beyond the noncombustible edge material and contacted the dome. This could result in ignition of the dome depending upon the type of material used for the dome. Testing per ASTM E108 or UL790 with a Class B brand should be the accepted requirement.

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

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

ICCFILENAME: ENNIS-F3-2610.2 AND ENNIS-F5-2610.2

FS182–09/10
2610.2

Proponent: Mike Ennis, representing Single Ply Roofing Industry (SPRI, Inc.)

Revise as follows:

2610.2 Mounting. The light-transmitting plastic shall be mounted above the plane of the roof on a curb constructed in accordance with the requirements for the type of construction classification, but at least 4 inches (102 mm) above the plane of the roof. Edges of the light-transmitting plastic skylights or domes shall be protected by metal or other approved noncombustible material, or the light transmitting plastic dome or skylight shall be shown to be able to resist ignition where exposed at the edge to a flame from a Class B brand as described in ASTM E 108 or UL 790. The Class B brand test shall be conducted on a skylight that is elevated to a height specified by the manufacturer, but not less than 4 inches (102 mm)

Exceptions:

(Exception remain unchanged)

Reason: The skylights should be tested at the minimum curb height specified for installation by the manufacturer, but not less than the 4-inch minimum required by the IBC.

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

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

ICCFILENAME: ENNIS-FS4-2610_2b

FS183–09/10
2610.3

Proponent: Julie Ruth, PE, JRuth Code Consulting, representing American Architectural Manufacturers Association

Revise as follows:

2610.3 Slope. Flat or corrugated light-transmitting plastic skylights shall slope at least four units vertical in 12 units horizontal (4:12). Dome-shaped skylights shall rise above the mounting flange a minimum distance equal to 10 percent of the maximum ~~span~~ width of the dome but not less than 3 inches (76 mm).

Exception: Skylights that pass the Class B Burning Brand Test specified in ASTM E 108 or UL 790.

Reason: The aspect ratios (length/width) of early generation plastic dome skylights tended to be 1:1 or 1.5:1, and seldom exceeded 2:1. Therefore, basing the dome rise required on the maximum span of the skylight, with a minimum of 3 inches, and the slope this imposed on the shorter span, was not considered to be excessive.

With more recent advances, however, it is now possible for the length of dome shaped skylights to be much greater than the width, with aspect ratios (length/width) of 4 or more not being uncommon. For these products, basing the rise required on the maximum span is excessive and referring to the maximum width, while retaining the minimum of 3 inches, is more appropriate.

Cost Impact: Could reduce cost for domed skylights, will not increase cost.

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

ICCFILENAME: RUTH-FS1-2610.3

FS184–09/10
2602, 2612.3.1 (New)

Proponent: Jesse J. Beitel, Hughes Associates, Inc. representing American Composites Manufacturers Association

1. Revise as follows:

2602 DEFINITIONS

FIBER REINFORCED POLYMER. Polymeric composite material consisting of reinforcement fibers impregnated with a fiber-binding polymer which is then molded and hardened. Fiber reinforced polymers are permitted to contain cores laminated between fiber reinforced polymer facings.

FIBERGLASS REINFORCED POLYMER. Polymeric composite material consisting of glass reinforcement fibers impregnated with a fiber-binding polymer which is then molded and hardened. Fiberglass reinforced polymers are permitted to contain cores laminated between fiberglass reinforced facings.

2. Add new text as follows:

2612.3 Interior Finish. Fiber reinforced polymer or fiberglass reinforced polymer used as *interior finish* shall comply with Chapter 8.

2612.3.1 Foam plastic cores. Fiber reinforced polymer or fiberglass reinforced polymer used as interior finish and which contain foam plastic cores shall comply with Chapter 8 and Chapter 26.

Reason: Some fiber reinforced polymers or fiberglass reinforced polymers may be constructed as sandwich panels. These panels would have fiber reinforced polymer or fiberglass reinforced polymer on both sides of a core material. The core material provides additional support to the fiber reinforced polymer or fiberglass reinforced polymer system. Typical core materials can be but are not limited to balsa wood, plywood or even foam plastic materials. The change in the definitions for fiber reinforced polymer or fiberglass reinforced polymer address these types of materials.

When foam plastic is used as a core material and the resultant fiber reinforced polymer or fiberglass reinforced polymer is used as interior finish, the resultant fiber reinforced polymer or fiberglass reinforced polymer must comply with both the requirements of Chapter 8 and Chapter 26.

Since foam plastic is regulated by Chapter 26, it is appropriate that fiber reinforced polymers or fiberglass reinforced polymers which contain foam plastic cores also be regulated by Chapter 26.

Cost Impact: This code change will increase the cost of construction

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

ICCFILENAME: BEITEL-FS6-2602

FS185–09/10

2602, 2612.1, 2612.2, 2612.3, 2612.4, 2612.5, 2612.6

Proponent: Maureen Traxler, City of Seattle, representing City of Seattle Dept of Planning & Development

1. Revise as follows:

SECTION 2602
DEFINITIONS

FIBER REINFORCED POLYMER. A polymeric composite material consisting of reinforcement fibers , such as glass, impregnated with a fiber-binding polymer which is then molded and hardened.

~~**FIBERGLASS REINFORCED POLYMER.** A polymeric composite material consisting of glass reinforcement fibers impregnated with a fiber-binding polymer which is then molded and hardened.~~

SECTION 2612
FIBER REINFORCED POLYMER ~~AND FIBERGLASS REINFORCED POLYMER~~

2612.1 General. The provisions of this section shall govern the requirements and uses of fiber reinforced polymer ~~or fiberglass reinforced polymer~~ in and on buildings and structures.

2612.2 Labeling and identification. Packages and containers of fiber reinforced polymer ~~or fiberglass reinforced polymer~~ and their components delivered to the job site shall bear the *label* of an *approved agency* showing the manufacturer's name, product listing, product identification and information sufficient to determine that the end use will comply with the code requirements.

2612.3 Interior finish<u>es</u>. Fiber reinforced polymer ~~or fiberglass reinforced polymer~~ used as *interior finish<u>es, decorative materials</u>* or *trim* shall comply with Chapter 8.

~~**2612.4 Decorative materials and trim.** Fiber reinforced polymer or fiberglass reinforced polymer used as *decorative materials* or *trim* shall comply with Section 806.~~

(Renumber subsequent sections)

2612.5 Light-transmitting materials. Fiber reinforced polymer ~~or fiberglass reinforced polymer~~ used as light-transmitting materials shall comply with Sections 2606 through 2611 as required for the specific application.

2612.6 Exterior use. Fiber reinforced polymer ~~or fiberglass reinforced polymer~~ shall be permitted to be installed on the *exterior walls* of buildings of ~~any type of~~ Types IV and V construction when such polymers meet the requirements of Section 2603.5. ~~and is fireblocked~~ Fireblocking shall be installed in accordance with Section 717. ~~The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613, respectively.~~

Exceptions:

1. Compliance with Section 2603.5 is not required when ~~When~~ all of the following conditions are met:
   1.1. When the area of the fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ does not exceed 20 percent of the respective wall area, the fiber reinforced polymer ~~or the fiberglass~~ ~~reinforced polymer~~ shall have a flame spread index of 25 or less. ~~or w~~When the area of the fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ does not exceed 10 percent of the respective wall area, the fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ shall have a flame spread index of 75 or less. The flame spread index requirements do not apply to ~~shall not be required for~~ coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer ~~or the fiberglass reinforced polymer~~.
   1.2. Fireblocking complying with Section 717.2.6 shall be installed.
   1.3. The fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ shall be installed directly to a noncombustible substrate or be separated from the *exterior wall* by one of the following materials: corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm) at any point, aluminum having a minimum thickness of 0.019 inch (0.5 mm) or other approved noncombustible material.
   ~~1.4. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613, respectively.~~
2. Compliance with Section 2603.5 is not required when the fiber reinforced polymer is ~~When~~ installed on buildings that are 40 feet (12 190 mm) or less above grade when all of the following conditions are met:
   2.1. ~~t~~The fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ shall meet the requirements of Section 1406.2. ~~and shall comply with all of the following conditions:~~
   ~~2.1~~ 2.2. Where the fire separation distance is 5 feet (1524 mm) or less, the area of the fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ shall not exceed 10 percent of the wall area. Where the fire separation distance is greater than 5 feet (1524 mm), there shall be no limit on the area of the *exterior wall* coverage using fiber reinforced polymer ~~or the fiberglass reinforced polymer~~.
   ~~2.2~~2.3. The fiber reinforced polymer ~~or the fiberglass reinforced polymer~~ shall have a flame spread index of 200 or less. The flame spread index requirements do not apply to ~~shall not be required for~~ coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer ~~or the fiberglass reinforced polymer~~.
   ~~2.3~~2.4. Fireblocking complying with Section 717.2.6 shall be installed.
   ~~2.4 The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613, respectively~~

Reason: "Fiberglass reinforced polymer" is a type of "fiber reinforced polymer", so the definitions can be combined. The provisions regulating fiber reinforced polymers are found in Section 2612, which includes identical regulations for polymers reinforced with glass as with other types of fibers. The two terms always appear together.

Section 2612.4 is unnecessary because Section 2612.3 already requires compliance with Chapter 8. The title of Chapter 8 is "Interior Finishes" and encompasses decorative materials and trim as well as "interior finish".

A substantive change is proposed that limits the use of this provision to combustible construction. Fireblocking is a crucial element of safe use of this material, and the only fireblocking provisions available are suitable only for combustible construction types. Section 717.2 clearly limits the scope of Section 717's fireblocking provisions to combustible buildings. Referencing that section creates the inference that the fireblocking requirements only apply when the fiber reinforced polymers are used on buildings of combustible construction. Unless fireblocking requirements appropriate to noncombustible buildings are provided, use of this material should be limited to combustible buildings.

The last sentence of the paragraph is not needed because the provisions of Chapter 16 apply regardless.

The changes to the exceptions are editorial. Charging language is added to both of them to specify that they are exceptions from the requirements of Section 2603.5. Other changes to the exceptions are consistent with changes proposed for the rest of Section 2612.

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

Analysis: Code change proposal FS185, FS186 and FS187 address Exception #1 to Section 2612.6. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: Traxler-FS3-2602

FS186–09/10
2612.6

Proponent: Jesse J. Beitel, Hughes Associates, Inc., representing American Composites Manufacturers Association

Revise as follows:

2612.6 Exterior use. Fiber reinforced polymer or fiberglass reinforced polymer shall be permitted to be installed on the exterior walls of buildings of any type of construction when such polymers meet the requirements of Sections 2603.5 and is fire-blocked in accordance with Section 717. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.

Exceptions:

1. When all of the following conditions are met:
   - 1.1. The fiber reinforced polymer or the fiberglass reinforced polymer shall not exceed an aggregate total of 20% of the area of the specific wall to which it is attached, and no single architectural element shall exceed 10% of the area of the specific wall to which it is attached, and no contiguous set of architectural elements shall exceed 10% of the area of the specific wall to which they are attached. ~~When the area of the fiber reinforced polymer or the fiberglass reinforced polymer does not exceed 20% of the respective wall area, the fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame-spread index of 25 or less or when the area of the fiber reinforced polymer or the fiberglass reinforced polymer does not exceed 10% of the respective wall area, the fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame-spread index of 75 or less. The flame-spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer or the fiberglass reinforced polymer~~
   - 1.2. The fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame-spread index of 25 or less. The flame-spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer or the fiberglass reinforced polymer.
   - 1.3. Fireblocking complying with Section 717.2.6 shall be installed.
   - 1.4. The fiber reinforced polymer or the fiberglass reinforced polymer shall be installed directly to a noncombustible substrate or be separated from the exterior wall by one of the following materials: corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm) at any point, Aluminum having a minimum thickness of 0.019 inch (0.5 mm) or other approved noncombustible material.
   - 1.5. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.

(Exception 2 remains unchanged)

Reason: This proposal addresses “large amounts of fuel loading” in any given area on the exterior wall. In essence, while a total of 20% of the wall surface can have the fiber reinforced polymer installed on it this modification will require that the fiber reinforced polymer be limited to discrete areas of not more than 10% of the area of the wall. This 10% limitation applies not only to a single architectural element but it also applies to a group of elements such that if they are touching, the grouping cannot exceed 10%. By this modification, the area of the fiber reinforced polymer elements must be less than 10% of the wall area, be noncontiguous and thus separation of the elements is provided. This modification addresses the issue whereby the 20% aggregate total would be in a single area.

Also, the industry has removed the Section whereby materials with a Class B flame spread are allowed and only materials with a Class A flame spread can be used on the exterior of a wall in this Exception. By this modification, the industry continues to improve the fire performance of these materials.

This Code proposal is based on a proposed comment made during the last Code cycle. At that time some issues with wording were identified and we feel that this has been corrected.

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

Analysis: Code change proposal FS185, FS186 and FS187 address Exception #1 to Section 2612.6. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: BEITEL-FS5-2612.6.doc

FS187–09/10
2612.6

Proponent: Douglas H. Evans, P.E., FSFPE, Clark County, NV, representing the Department of Development Services – Building Division

Revise as follows:

2612.6 Exterior use. Fiber reinforced polymer or fiberglass reinforced polymer shall be permitted to be installed on the exterior walls of buildings of any type of construction when such polymers meet the requirements of Sections 2603.5 and is fireblocked in accordance with Section 717. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.

Exceptions~~:~~

~~1. When all of the following conditions are met:~~
- ~~1.1. When the area of the fiber reinforced polymer or the fiberglass reinforced polymer does not exceed 20 percent of the respective wall area, the fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame spread index of 25 or less or when the area of the fiber reinforced polymer or the fiberglass reinforced polymer does not exceed 10 percent of the respective wall area, the fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame spread index of 75 or less.The flame spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer or the fiberglass reinforced polymer~~
- ~~1.2. Fireblocking complying with Section 717.2.6 shall be installed.~~
- ~~1.3. The fiber reinforced polymer or the fiberglass reinforced polymer shall be installed directly to a noncombustible substrate or be separated from the exterior wall by one of the following materials: corrosion-resistant steel having a minimum base metal thickness of 0.016 inch (0.41 mm) at any point, Aluminum having a minimum thickness of 0.019 inch (0.5 mm) or other approved noncombustible material.~~
- ~~1.4. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.~~

~~2~~1. When installed on buildings that are 40 feet (12 190 mm) or less above grade, the fiber reinforced polymer or the fiberglass reinforced polymer shall meet the requirements of Section 1406.2 and shall comply with all of the following conditions:
- ~~2~~1.1. Where the fire separation distance is 5 feet (1524 mm) or less, the area of the fiber reinforced polymer or the fiberglass reinforced polymer shall not exceed 10 percent of the wall area. Where the fire separation distance is greater than 5 feet (1524 mm), there shall be no limit on the area of the exterior wall coverage using fiber reinforced polymer or the fiberglass reinforced polymer.
- ~~2~~1.2. The fiber reinforced polymer or the fiberglass reinforced polymer shall have a flame spread index of 200 or less. The flame spread index requirement shall not be required for coatings or paints having a thickness of less than 0.036 inch (0.9 mm) that are applied directly to the surface of the fiber reinforced polymer or the fiberglass reinforced polymer.
- ~~2~~1.3. Fireblocking complying with Section 717.2.6 shall be installed.
- ~~2~~1.4. The fiber reinforced polymer or the fiberglass reinforced polymer shall be designed for uniform live loads as required in Table 1607.1 as well as for snow loads, wind loads and earthquake loads as specified in Sections 1608, 1609 and 1613 respectively.

Reason: Section 2612.1 through the base requirements/allowances of 2612.6 and Exception 2 of 2612.6 appear to provide a level of protection consistent with other established allowances (e.g. EIFS under Section 2603.5). However, **the first exception** to Section 2612.6 **allows an unacceptable increase in the amount of combustible materials on exterior facades of any height and any type of construction**.

Exception 1 allows up to 20 percent of the respective wall area of any type of construction to be covered with these materials when they have a flame spread index of 25 or less (or up to 10 percent with a flame spread index not exceeding 75). Twenty percent (and even 10 percent) of the

respective wall area can constitute **one extremely large continuous fuel package that can allow fire on an exterior façade to propagate unchecked**.

The test used to determine flame spread (ASTM E 84) is not an appropriate test to ensure plastics provide the level of protection intended by code for the proposed applications. The ignition source used for ASTM E 84 is substantially less than the exposure required for EIFS under Section 2603.5 (which is intended to simulate a fully involved room fire projecting out of a window onto the exterior façade). It has been demonstrated a number of times that **polymers only formulated to pass the E 84 test will typically not pass more rigorous tests**.

In addition, some polymers create flaming droplets and pool fires on the floor of the E 84 furnace. Installing such materials over locations where exits discharge would not be prudent.

As written, **Exception 1 applies to exterior facades of high-rise buildings that may be out of reach of fire department hose lines**. A façade fire out of reach of standard fire-fighting operations creates a hazard to occupants of the building, the building itself and the emergency responders trying to keep it from propagating. This does not reflect the intent of code.

In addition, Section 2612 does not provide guidance to restrict the thickness of these materials. The photo included with the initial proposed code change shows a cornice projecting from an exterior wall at least 5 feet. Although the "area" of polymer to exterior wall may not exceed the 10 or 20 percent limitation, the extent of projection (depth) can create a substantial combustible load on an exterior façade any height above grade and also needs to be limited. Eliminating Exception 1 requires that these materials pass the same test as EIFS, or be limited to buildings not exceeding 40 feet high.

The Report of Public Hearings indicates the one of the reasons the committee supported approval was that "the products are currently widely in use." The floor discussion indicated that these products have been installed outside of the limitations of the code for years. Just because an application has been installed "illegally" is not a reason to revise the code. These non-compliant installations in no way indicate that these materials provide the level of protection intended by code.

In summary, the amount of combustible materials allowed by Exception 1 on exterior facades of any height and any type of construction creates a potentially unsafe condition to building occupants, increases the risk to property and places unreasonable demands on firefighting personnel.

Cost Impact: This code change proposal will increase the cost of construction beyond what Section 2612 would otherwise allow.

Analysis: Code change proposal FS185, FS186 and FS187 address Exception #1 to Section 2612.6. The committee needs to make its intent clear with respect to these provisions.

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

ICCFILENAME: EVANS-FS2-Section 2612

FS188–09/10

2613.3, 2613.3.1, 2613.3.2, Chapter 35

Proponent: Marcelo Hirschler (GBH International) on behalf of American Fire safety Council

1. Revise as follows:

2613.3 Surface-burning characteristics. Reflective plastic core insulation shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E 84 or UL 723. The reflective plastic core insulation shall be tested at the maximum thickness intended for use . Test specimen preparation and mounting shall be in accordance with ASTM E 2599. ~~and shall be tested using one of the mounting methods in Section 2613.3.1 or 2613.3.2.~~

~~**2613.3.1 Mounting of test specimen.** The test specimen shall be mounted on 2-inch-high (51 mm) metal frames so as to create an air space between the unexposed face of the reflective plastic core insulation and the lid of the test apparatus.~~

~~**2613.3.2 Specific testing.** A set of specimen preparation and mounting procedures shall be used which are specific to the testing of reflective plastic core insulation.~~

2. Add new standard to Chapter 35 as follows:

ASTM E 2599-09	Standard Practice for Specimen Preparation and Mounting of Reflective Insulation Materials and Radiant Barrier Materials for Building Applications to Assess Surface Burning Characteristics

Reason: ASTM E 2599 was specifically developed as the test specimen preparation and mounting method for reflective insulation materials when using ASTM E 84 or UL 723, Steiner tunnel test. The sections proposed to be deleted were written in anticipation that the standard practice would be issued and describe both a mounting method that is specific for reflective plastic core insulation and that uses a test specimen mounted on two inch metal frames to create an air space.

Note that this code proposal does not affect testing in accordance with the room corner test or the other requirements for the reflective insulation materials.

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

Analysis: A review of the standard(s) proposed for inclusion in the code, ASTM E2599-09, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: HIRSCHLER-FS13-2613.3

FS189–09/10
2601.1, 2602.1, 2612.1, 2612 (New), Chapter 35

Proponent: Sam Francis, representing American Forest & Paper Association

THIS CODE CHANGE WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE. PLEASE SEE THE AGENDA FOR THIS COMMITTEE.

1. Revise as follows:

SECTION 2601
GENERAL

2601.1 Scope. These provisions shall govern the materials, design, application, construction and installation of foam plastic, foam plastic insulation, plastic veneer, interior plastic finish and trim, and light-transmitting plastics, and composite plastics. See Chapter 14 for requirements for exterior wall finish and trim and Chapters 6, 10 and 16 for structural requirements.

SECTION 2602
DEFINITIONS

2. Add new text as follows:

2602.1 General. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

COMPOSITE, WOOD- PLASTIC. A composite material made primarily from wood or cellulose-based materials in combination with a smaller fraction of plastic(s) by weight.

3. Add new text as follows:

SECTION 2612
WOOD-PLASTIC COMPOSITES USED AS STRUCTURAL MATERIALS

2612.1 General. Wood-plastic composite materials used in any exterior structural application, including deck boards, stair treads, handrails and guardrail systems shall bear a label indicating compliance with the provisions of ASTM D 7032,

2612.1.1 Structural applications. Wood-plastic composite materials used for structural purposes shall comply with the provisions of this code or with Section 2612.2. The label required in Section 2612.1 shall indicate the type and magnatude of the load determined in ASTM D 7031 or ASTM D 7032.

2612.1.2 Flame Spread Index. Wood-plastic composite materials required elsewhere in this code to have a Flame Spread Index, shall have those properties determined in accordance with Chapter 8. Otherwise, wood-plastic composite materials shall meet the requirements of ASTM D 7032.

Exception: materials determined to be noncombustible in accordance with Section 703.4.2.

2612.2 Prescriptive Design Considerations. Wood-plastic composite material shall be permitted to be installed in accordance with the following requirements.

2612.2.1 Span rating. Wood-plastic composite materials used as structural components of a floor or stair system shall have a span rating determined in accordance with ASTM D 7032 with a deflection limit of L/360.

2612.2.2 Guard construction and attachment. Guard construction and attachment shall be in accordance with ICC ES Acceptance Criteria AC174 or by engineering analysis.

2612.2.3 Termite and Decay resistance. Wood-plastic composite materials shall be termite and decay resistant as determined in accordance with Section 4.8 of ASTM D 7032. The sampling requirements for ASTM D 2017 shall be modified to require six specimens for each of the two fungi tested.

2612.2.4 Differential movement of components. Wood-plastic composite materials used as structural elements shall have approved fastening to allow for differential movement of the structural members to which it is fastened.

(Renumber subsequent sections)

4. Add new standard to Chapter 35 as follows:

ASTM
D7031-04 Standard Guide for Evaluating Mechanical and Physical Properties of Wood- Plastic Composite Products, ASTM International.

ASTM
D7032-04 Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails), ASTM International.

ICC ES Acceptance Criteria For Deck Board Span Ratings And Guardrail Systems (Guards And Handrails) AC 174

Reason: In the last cycle of the code, proposals were made to introduce language for materials which that industry calls wood/plastic composite material. The proposal was to include it in Chapter 23 –Wood. This is clearly inappropriate because the base material is plastic. Chapter 26 – Plastic is the more reasonable place for these requirements to reside. Moreover, Section 1406 *Combustible Materials On The Exterior Side of Exterior Walls*, specifically notes plastic-based materials as a separate category and has an exception for Plastics complying with Chapter 26. Since Section 1406.3 (Balconies and similar projections) describes the precise uses for these composites, it makes sense to consider them in the same manner as other products with similar base materials (plastic resin) and place them in Chapter 26.

In the past, it was argued that because the composite materials contain wood, they ought to reside in that chapter. This is flawed. The Standard referenced for this material has no minimum amount of non-plastic material so that it can be exclusively plastic under the standard. In fact, additives, which may be fillers, are not compelled to be 'wood'. Hence, the resin base is the material which is the basis for the mechanical and fire properties of this material. It should therefore logically be included with other materials also of the same type.

In the development of the standard, certain requirements from ICC ES Acceptance Criteria were reduced. This proposal also seeks to maintain the criteria by which the products have been successfully judged and brought into the building code arena in the past. Maintaining those levels of performance seem to be necessary to ensure that the material is evaluated consistently with other products.

Finally the basic issues of fire performance, mechanical properties, and interface with other building materials are included in this proposal to facilitate correlation with the rest of the code.

Cost Impact: Unable to determine any cost impact.

Staff Analysis: Acceptance criteria are developed for use solely by ICC-ES for purposes of issuing ICC-ES evaluation reports. They are available to the public as a courtesy to ICC-ES report applicants and to testing laboratories and inspection agencies that provide services to applicants. Acceptance criteria are not for use outside of the ICC-ES system. ICC-ES Acceptance Criteria are not intended to be code-referenced documents and they do not meet the ICC criteria for referenced standards as contained in ICC Council Policy CP-28. A review of the standard(s) proposed for inclusion in the code, ASTM D7031-04 and ASTM D7032-04, for compliance with ICC criteria for referenced standards given in Section 3.6 of Council Policy #CP 28 will be posted on the ICC website on or before September 24, 2009.

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

ICCFILENAME: FRANCIS-FS7-2601.1

FS190–09/10
2606.12, 2612 (New)

Proponent: David M. Baker, representing PDM Solar, Inc.

Delete and substitute as follows:

~~**2606.12 Solar collectors.** Light-transmitting plastic covers on solar collectors having noncombustible sides and bottoms shall be permitted on buildings not over three stories in height or 9,000 square feet (836.1 m^2) in total floor area, provided the light-transmitting plastic cover does not exceed 33.33 percent of the roof area for CC1 materials or 25 percent of the roof area for CC2 materials.~~

~~**Exception:** Light-transmitting plastic covers having a thickness of 0.010 inch (0.3 mm) or less or shall be permitted to be of any plastic material provided the area of the solar collectors does not exceed 33.33 percent of the roof area.~~

SECTION 2612
LIGHT-TRANSMITTING PLASTIC COVERS ON SOLAR COLLECTORS

2612.1 General. Light-transmitting plastic covers on solar collectors having noncombustible sides and bottoms shall comply with this section and Section 2606. Light-transmitting plastic solar collector covers shall not be installed in Groups H, I-2 and I-3. In all other groups, light-transmitting plastic solar collector covers shall comply with any one of the following conditions:

1. The building is not over three stories in height or 9,000 square feet (836.1 m^2) in total floor area.
2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. The roof construction is not required to have a fire-resistance rating by Table 601.

2612.2 Location. Where exterior wall openings are required to be protected by Section 704.8, a plastic solar collector cover shall not be installed within 6 feet (1829 mm) of such exterior wall.

2612.3 Area limitations. Plastic solar collector covers shall be limited in area and the aggregate area of plastic solar collector covers shall be limited as a percentage of the roof area in accordance with Table 2612.3.

Exceptions:

1. The area limitations of Table 2612.3 shall be permitted to be increased by 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

2. Light-transmitting plastic covers having a thickness of 0.010 inch (0.3 mm) or less or shall be permitted to be of any plastic material provided the area of the solar collectors does not exceed 33.33 percent of the roof area.

TABLE 2612.3
AREA LIMITATIONS FOR LIGHT-TRANSMITTING PLASTIC COVERS ON SOLAR COLLECTORS

CLASS OF PLASTIC	MAXIMUM AREA OF INDIVIDUAL PLASTIC SOLAR COLLECTOR COVERS (square feet)	MAXIMUM AGGREGATE AREA OF PLASTIC COVERS (percent of roof area)
CC1	150	33.33
CC2	30	25

For SI: 1 square foot = 0.0929 m^2

Reason: The code as currently written is overly restrictive in regards to the use of plastic covers on solar collectors on large buildings. As is shown in further detail in this justification, the identical material is currently permitted for use on buildings of the same size as that proposed in applications which pose more of a risk to the building than in the solar collector cover application.

As a result of the current focus on energy costs and emissions of greenhouse gases, renewable energy in general and solar energy in particular is being considered for new building construction. A significant amount of research in currently being conducted in order to develop new cost effective solar energy applications which have the potential to be widely adopted and provide a part of the solution to our energy and environmental problems. For example, PDM Solar, Inc. is developing a solar powered vapor compression air conditioning system, using a patent pending solar powered vapor compression technology. This technology uses solar heated hot water between 180 F and 200 F to provide the steam to operate the concentrator or energy conversion unit.

The use of light-transmitting plastic covers provides significant benefits over the use of glass for our applications. The plastic has dual walls, which lowers the convection and radiation losses, allowing the collectors to produce the desired water temperature with a higher efficiency. The higher efficiency enables the production of more hot water from a given area, providing more air conditioning. The plastic covers are also substantially lighter than glass, lowering the added roof load. The plastic covers are also available at a lower cost than glass. The lower cost combined with higher efficiency provides a more economical system with a faster payback, which is necessary to ultimately make solar air conditioning competitive with air conditioning provided from fossil fuels.

Although ICC staff was unable to discover the original motivation for 2606.12, we believe that the prohibition of the use of light-transmitting plastic solar collector covers on buildings over 3 stories or 9000 square feet is a result of safety concerns for occupants and firefighters. However, use of the same product is already permitted by the code on the roofs of the same size buildings with the same area limitations as included in the proposed change. As detailed below, we believe that use of the product for solar collector covers poses no more, and often less, risk to both occupants and fire fighters than the uses for which the product is currently permitted. At the suggestion of ICC staff, we are seeking a change in ICC 2606.12 during the 2009/2010 ICC code development cycle.

The light-transmitting plastic that we are requesting to use is a 2-layer 10-mm (3/8") structured polycarbonate sheet. Each layer is approximately 0.020" thick. We are planning to purchase the polycarbonate from Gallina USA, but equivalent product is made by several companies, including MacroLux , PolyGal, and General Electric. The proposed product has been tested by the ICC Evaluation Service and others and is a class CC1 product. The product is considered self-extinguishing. It will burn when exposed to a flame, but will self extinguish when the flame is removed (per ASTM D 635). The product has a spontaneous ignition temperature of 896 F per ASTM D-1929, 246 F higher than required by the code (2606.4). It has a flame spread of 25 and a smoke-developed classification of 135 when tested per ASTM E84-01, which compares favorably to the maximum 450 smoke developed index allowed in the code. The product has been found to have a linear burn rate of 0.0 mm/min when tested to ASTM D 635-98.

Two sections of the code permit the use of the proposed product on the roof of buildings larger than 9000 square feet. Section 2609 of the code permits the use of light-transmitting plastic roof panels and section 2610 permits the use of light-transmitting plastic for skylight glazing. We believe that the proposed use of light-transmitting plastic poses no more, and generally less, risk to occupants and firefighters than either of these permitted uses.

In section 2609, the product is permitted to be used in all groups except H, I-2, and I-3. Section 2609 permits the CC1 class plastic to cover 60% of the floor space, if the building is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

In section 2610, the product is permitted to be used without restriction by group. Section 2610 permits the CC1 class plastic to cover 66.6% of floor area, if the building is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

We believe that use of the product for solar collector covers poses no more, and generally less, risk to both occupants and fire fighters than for either of these two permitted uses.

Both of the permitted uses allow for the product to be used in place of, or replace part of, the roof assembly. The proposed use does not replace the roof assembly, which remains intact to provide the fire safety for which it was designed.

Use of the product on the roof of the building has the potential to increase the risk to occupants and firefighters in the following areas: 1) an increase in the amount of combustible material available to support a fire, 2) an increase in the amount of smoke and byproducts which would develop during a fire, 3) shortening the time until a fire penetrates the roof assembly, and 4) increasing the potential to provide a ignition source.

In the first three areas, the proposed use would pose either the same risk as the currently permitted uses or, in many cases, substantially less.

In the case of a fire that originates within the building, the proposed use should have substantially less effect on the occupants than either of the currently permitted uses. Unlike the currently permitted uses, the proposed use does not affect the fire safety capabilities of the existing roof assembly and the product is not directly in contact with the interior of the building. As a result, the proposed use of the product would have a minimal affect on the amount of combustible material available and the smoke generated when compared to either of the currently permitted uses. Unlike the permitted uses, the proposed use would have no affect on shortening the time until the fire penetrates the roof.

In the case of a fire that originated from an external source, such as a lightning strike or a fire in another structure, the amount of combustible material available and smoke generated externally, affecting the firefighters, would be no more than under the currently permitted uses. Because the proposed use of the product does not pierce the roof, the effect on the occupants of the combustible material available, the smoke generated, and the time for a fire to penetrate the roof should be less than under the currently permitted uses.

In either the case of an internally generated or an externally generated fire, the use of the product in the proposed application should have no more (and often substantially less) affect on the safety of the occupants and firefighters than other currently permitted uses in the areas of combustible material, smoke developed, and effectiveness of the roof assembly.

The final area of potential concern would be the potential for use of the light-transmitting plastic as a solar collector material to act as an ignition source. The self ignition temperature of the proposed light-transmitting plastic has been tested at 896 F. The maximum solar collector stagnation temperature for our flat panel non concentrating solar collectors is less than 450 F, which provides a safety margin of 400 F. In addition, both the walls and bottom of the solar collectors are constructed of non-combustible material (aluminum), providing an additional level of protection between the plastic cover and the roof assembly.

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

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

ICCFILENAME: BAKER-FS1-2606.12.doc