G11-03/04
108.2

Proposed Change as Submitted:

Proponent: Paul Hayward, City of Farmington, Utah; representing Bonneville Chapter ICC

1. Revise as follows:

108.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority. See Appendix "K".

2. Add new text as follows:

APPENDIX K
PERMIT FEES

TOTAL VALUATION	FEE
$1 to $ 500	$24
$501 to $2,000	$24 for the first $500; plus $3 for each additional $100 or fraction thereof, to and including $2,000
$2,000 to $40,000	$69 for the first $2,000; plus $11 for each additional $1,000 or fraction thereof, to and including $40,000
$40,001 to $100,000	$487 for the first $40,000; plus $9 for each additional $1,000 or fraction thereof, to and including $100,000
$100,001 to $500,000	$1,027 for the first $100,000; plus $7 for each additional $1,000 or fraction thereof, to and including $500,000
$500,001 to $1,000,000	$3,827 for the first $500,000; plus $5 for each additional $1,000 or fraction thereof, to and including $1,000,000
$1,000,001 to $5,000,000	$6,327 for the first $1,000,000; plus $3 for each additional $1,000 or fraction thereof, to and including $5,000,000
$5,000,000 and over	$18,327 for the first $5,000,000; plus $1 for each additional $1,000 or fraction thereof

3. Revise as follows:

R108.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority. See Appendix "L".

4. Add new text as follows:

APPENDIX L
PERMIT FEES

TOTAL VALUATION	FEE
$1 to $ 500	$24
$501 to $2,000	$24 for the first $500; plus $3 for each additional $100 or fraction thereof, to and including $2,000
$2,000 to $40,000	$69 for the first $2,000; plus $11 for each additional $1,000 or fraction thereof, to and including $40,000
$40,001 to $100,000	$487 for the first $40,000; plus $9 for each additional $1,000 or fraction thereof, to and including $100,000
$100,001 to $500,000	$1,027 for the first $100,000; plus $7 for each additional $1,000 or fraction thereof, to and including $500,000
$500,001 to $1,000,000	$3,827 for the first $500,000; plus $5 for each additional $1,000 or fraction thereof, to and including $1,000,000
$1,000,001 to $5,000,000	$6,327 for the first $1,000,000; plus $3 for each additional $1,000 or fraction thereof, to and including $5,000,000
$5,000,000 and over	$18,327 for the first $5,000,000; plus $1 for each additional $1,000 or fraction thereof

Reason: Many jurisdictions throughout the country are now adopting the International Building Code. As several have not adopted a building code prior, they are looking for guidance in setting appropriate fees. While some feel a fee schedule is not appropriate in the body of the code, placing a fee schedule in the appendix will aid many to assess fees that will assist in fairly and properly administering the code. It will be a tremendous resource for those requiring such information.

Cost Impact: None

Items 1 & 2 (IBC)
Committee Action: **Disapproved**

Committee Reason: See committee reasons on G9-03/04.

Assembly Action: **None**

Items 3 & 4 (IRC)
Committee Action: **Approved as Submitted**

Committee Reason: Based on proponent's published reason.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

John Morgan, City of Florissant, Missouri, representing Missouri Association of Building Officials and Inspectors, requests Disapproval for Items 3 and 4.

Commenter's Reason: The proponent states that this change would assist those communities that have not adopted a code in the past to establish fees for permits. Further, during testimony at the IBC hearing, the proponent stated that this would assist in establishing consistency in fees across the country. The IBC General committee denied this request for the IBC, however, the IRC committee approved as submitted for the IRC. The purpose of fees is not to establish consistency in fees across the country. The purpose of fees is to fully recover or at least reasonably recover costs for services rendered in protecting the health, safety and welfare of the community. If a new department uses this fee schedule without evaluating the needs of the department, such as material, equipment staffing and other needs, the fees adopted of the appendix would lead to potential serious problems for the building official. This subject needs to be further evaluated and possibly an appendix section giving guidelines on how to establish fees and possibly fee guidelines using modification factors for the various areas of the country. The fee schedule that was approved by the committee was established from the Utah Bonneville chapter. Although we believe that the intent is good, this fee schedule would in no way work for highly populated metropolitan areas and related suburbs for which the cost of living is much higher.

G17-03/04
201.4

Proposed Change as Submitted:

Proponent: Autumn Hartsoe, City of Goodyear; representing AZBO Code Review and Development Committee

THIS PROPOSAL IS ON THE AGENDA OF THE IBC GENERAL, IMC, IPC, IFGC, IRC, IECC, ICC EC, IPSDC AND IPMC CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

1. (IBC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

2. (IMC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

3. (IPC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

4. (IFGC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

5. (IRC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

6. (IECC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

7. (ICC EC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

8. (IPSDC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

9. (IPMC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

Reason: The purpose of this change is to provide consistency and uniformity in use of the codes. There needs to be a single reference document to establish ordinarily accepted meanings of words. Not all dictionaries define words the same and not all parts of this country apply the same meanings to all words. This also provides consistency with Section 201.4 of the International Fire Code.

Analysis: The ICC Codes Correlation Committee (CCC) reviewed this proposal and determined that the membership should decide the extent of correlation that should exist among the International Codes on this issue through the code development process.

Cost Impact: None

Item 1 (IBC)
Committee Action: **Disapproved**

Committee Reason: Reference to a specific dictionary is unnecessary. There is no technical explanation that tells why this particular dictionary is superior to others.

Assembly Action: **None**

Item 2 (IMC)
Committee Action: **Disapproved**

Committee Reason: Reference to a specific dictionary is unnecessary. There is no technical explanation that tells why this particular dictionary is superior to others.

Assembly Action: **None**

Item 3 (IPC)
Committee Action: **Approved as Submitted**

Committee Reason: Based on proponent's published reason.

Assembly Action: **Disapproved**

Item 4 (IFGC)
Committee Action: **Disapproved**

Committee Reason: Reference to a specific dictionary is unnecessary. There is no technical explanation that tells why this particular dictionary is superior to others.

Assembly Action: **None**

Item 5 (IRC)
Committee Action: **Disapproved**

Committee Reason: Reference to a specific dictionary is unnecessary. There is no technical explanation that tells why this particular dictionary is superior to others.

Assembly Action: **None**

Item 6 (IECC)
Committee Action: **Disapproved**

Committee Reason: Not every definition in the code is covered in Webster's dictionary. There are other documents which address commonly accepted construction terminology as well as many new terms found in common language usage which may not be found there. Therefore limiting definitions to one document is not reasonable.

Assembly Action: **None**

Item 7 (EC)
Committee Action: **Disapproved**

Committee Reason: Reference to a specific dictionary is unnecessary. There is no technical explanation that tells why this particular dictionary is superior to others.

Assembly Action: **None**

Item 8(IPSDC)
Committee Action: **Disapproved**

Committee Reason: Reference to a specific dictionary is unnecessary. There is no technical explanation that tells why this particular dictionary is superior to others.

Assembly Action: **None**

Item 9 (IPMC)
Committee Action: **Approved as Submitted**

Committee Reason: This gives a source for definitions not already listed in the code.

Assembly Action: **Disapproved**

Individual Consideration Agenda

This item is on the agenda for individual consideration because an assembly action was successful on Item 3 and Item 9 (which are shown below) .

3. (IPC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings

such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

9. (IPMC) Revise as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

G19-03/04
202 (IRC 202)

Proposed Change as Submitted:

Proponent: Rick Davidson, City of Hopkins, MN; representing Association of Minnesota Building Officials

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

1. (IBC) Revise as follows:

SECTION 202
DEFINITIONS

BASEMENT. That portion of a building that is partly or completely below grade and having a ceiling height of 6 feet 8 inches (2032 mm) or more (see "Story above grade plane" and Sections 502.1 and 1612.2).

CRAWL SPACE. That portion of a building that is partly or completely below grade and having a ceiling height of less than 6 feet 8 inches (2032 mm).

2. (IRC) Revise as follows:

SECTION R202
DEFINITIONS

BASEMENT. That portion of a building that is partly or completely below grade and having a ceiling height of 6 feet 8 inches (2032 mm) or more (see "Story above grade plane" and Sections 502.1 and 1612.2).

CRAWL SPACE. That portion of a building that is partly or completely below grade and having a ceiling height of less than 6 feet 8 inches (2032 mm).

Reason: To provide direction to the user of the IRC to determine the difference between the terms basement and crawl space, both of which are used in the IRC. How do you decide when the code requires a smoke detector in an under floor space when it requires them in a basement but not in a crawl space. What is the difference?

Cost Impact: None

Item 1 (IBC)
Committee Action: **Disapproved**

Committee Reason: The proposed definition is insufficient. The language could be interpreted to define an attic as being a crawl space.

Assembly Action: **None**

Item 2 (IRC)
Committee Action: **Disapproved**

Committee Reason: Definitions should not impose technical requirements. Space should be defined by how it is to be used. On sloping sites, the crawl space definition would have no practicality.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Rick Davidson, City of Hopkins, Minnesota representing Association of Minnesota Building Officials requests Approval as Submitted for Items 1 and 2.

Commenter's Reason: This proposal was submitted for the IRC but was heard by the IRC and IBC General Committees. It may or may not have any application in the IBC. Some clarification in the IRC is necessary to determine when the various regulations pertaining to basements and crawl spaces must be applied. This proposal helps to clarify what a basement is by including the height requirements already found in section R305.1. That section requires basements have a ceiling height of 6 feet 8 inches or more. That is also consistent with IBC section 1009.1 that exempts under floor spaces with a ceiling height of less than 6 feet 8 inches from needing egress windows. In the IRC, any space typically thought of as a crawl space is by definition a basement and would require smoke detectors, egress windows, approved stairs, etc. Yet, the term "crawl space" is used 56 times in the IRC, often addressing exceptions to the previously stated rules but is not defined. Some examples where confusion can occur are: the wood foundation provisions have differing plywood sheathing requirements for basements vs. crawl spaces, smoke alarms are required in basements but not crawl spaces, R-value requirements are different for crawl space walls vs. basement walls, electrical wiring requirements are different in crawl spaces vs. basements, and there are significantly different radon rules for crawl spaces vs. basements. Some have argued that they have homes built with crawl spaces that are 10, 12, or 20 feet tall. While the purpose of constructing a home with such a "crawl space" is not readily apparent, it seems logical to conclude that such a space would be used for the same purposes that a "basement" would be used. On the surface, it appears that calling such a space something other than a basement is a feeble attempt at avoiding all of the code requirements that apply to a true basement. The IRC Committee gave as its reason for denial that a definition should not impose technical requirements. Placing a dimension in the definition does not impose a technical requirement. It is necessary to place a dimension in the definition to draw a distinction between a crawl space and a basement. This dimension is already in the code. Other definitions routinely have dimensions or limitations to clarify intent. Examples include the definitions of "basement wall", "conditioned

area", "confined space", "hot water", "manufactured home", "mass wall", "story above grade", and "unusually tight construction" to list just a few. So the addition of a dimension in these definitions is nothing new and a common practice.

G26-03/04
302.1

Proposed Change as Submitted:

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

Revise as follows:

302.1 General. (Unchanged)

~~**302.1.1 Incidental use areas.** Spaces that are incidental to the main occupancy shall be separated or protected, or both, in accordance with Table 302.1.1 or the building shall be classified as a mixed occupancy and comply with Section 302.3. Areas that are incidental shall be classified in accordance with the main occupancy of the portion of the building in which the incidental use area is located.~~

> ~~**Exception:** Incidental use areas within and serving a dwelling unit are not required to comply with this section.~~

~~**302.1.1.1 Separation.** Where Table 302.1.1 requires a fire-resistance-rated separation, the incidental use area shall be separated from the remainder of the building with a fire barrier. Where Table 302.1.1 permits an automatic fire-extinguishing system without a fire barrier, the incidental use area shall be separated by construction capable of resisting the passage of smoke. The partitions shall extend from the floor to the underside of the fire-resistance-rated floor/ceiling assembly or fire-resistance-rated roof/ceiling assembly or to the underside of the floor or roof deck above. Doors shall be self-closing or automatic-closing upon detection of smoke. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.~~

~~**302.2 Accessory use area.** Except for accessory use areas of Group H in accordance with Section 302.3.1 or when required for incidental use areas as indicated in Section 302.1.1, a fire barrier shall not be required for a use not occupying more than 10 percent of the area of any floor of a building, nor more than the tabular values for either height or area for such use.~~

302.2.1 Assembly areas. (Unchanged)

302.3 Mixed occupancies. Where a building is occupied by two or more uses not included in the same occupancy classification, the building or portion thereof shall comply with Section 302.3.1, ~~or~~ 302.3.2 or 302.3.3 or combination of these sections.

Exceptions:
1. Occupancies separated in accordance with Section 508. (special provisions)
2. Areas of Group H-2, H-3, H-4 or H-5 occupancies shall be separated from any other occupancy in accordance with Section 302.3.2.
3. Where required by Table 415.3.2, areas of Group H-1, H-2 or H-3 shall be in a separate and detached building or structure.
4. ~~Accessory use areas in accordance with Section 302.2.~~
5. ~~Incidental use areas in accordance with Section 302.1.1.~~

302.3.1 Accessory use area. Occupancies that occupy not more than 10 percent of the aggregate area of any floor of a building, nor more than the tabular values for either height or area for such use shall be considered as accessory use areas. Accessory use areas shall be classified in accordance with the main occupancy of the portion of the building in which the accessory use area is located. All code requirements shall be determined by applying those applicable to the main occupancy. Fire separations are not required between uses, except as required Table 302.3.1.

Exceptions:
1. Accessory use areas within and serving a dwelling unit are not required to comply with this section.
2. Accessory use areas of an assembly occupancy are not considered separate occupancies if the floor area is equal to or less than 750 square feet. Assembly areas that are accessory to Group E are not considered separate occupancies. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

TABLE ~~302.1.1~~ 302.3.1 ACCESSORY USE AREAS

ROOM OR AREA	SEPARATION[a]

(No changes to current table)

302.3.1.1.1 Separation. Where Table 302.3.1 requires a fire-resistance-rated separation, the accessory use area shall be separated from the remainder of the building with a fire barrier. Where Table 302.3.1 permits an automatic fire-extinguishing system without a fire barrier, the incidental use area shall be separated by construction capable of resisting the passage of smoke. The partitions shall extend from the floor to the underside of the fire-resistance-rated floor/ceiling assembly or fire-resistance-rated roof/ceiling assembly or to the underside of the floor or roof deck above. Doors shall be self-closing or automatic-closing upon detection of smoke. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.

302.3.2 ~~302.3.1~~ Nonseparated uses. Each portion of the building shall be individually classified as to use. The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building. All other code requirements shall apply to

each portion of the building based on the use of that space except that the most restrictive applicable provisions of Section 403 and Chapter 9 shall apply to these nonseparated uses. Fire separations are not required between uses, except as required by other provisions.

302.3.3 ~~302.3.2~~ Separated uses. Each portion of the building shall be individually classified as to use and shall be completely separated from adjacent areas by fire barrier walls or horizontal assemblies or both having a fire-resistance rating determined in accordance with Table 302.3.2 for the uses being separated. Each fire area shall comply with the code based on the use of that space. Each fire area shall comply with the height limitations based on the use of that space and the type of construction classification. In each story, the building area shall be such that the sum of the ratios of the floor area of each use divided by the allowable area for each use shall not exceed one.

Exception: (Unchanged)

Reason: There has always been confusion when it comes to "accessory uses" and "incidental Use."

The changes which were made last cycle to clarify that both accessory use areas and incidental use areas are subsets of a mixed occupancy building was a beginning. This proposal clarifies that incidental use areas were are only accessory use areas that need to be separated from other occupancies.

The hierarchy of mixed occupancies has been established. With the designer being given the choice of which option they wish to apply when designing a building.

The steps are to 1) identify the occupancies in the building, 2) see if any occupancy occupies < 10% of the floor area, 3) if so, then it is an accessory occupancy and Section 302.3.1 applies. If > 10% then it is not an accessory use and must comply with either 302.3.2 or 302.3.3..

If an accessory use, it becomes clear that there are certain cases where it must be separated.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: Presently, incidental uses and accessory uses are two different things. While it may be possible to combine these, this proposed code change loses some things in the language. For instance, the proposed revision would require all code requirements of the main use to be applied to the accessory use. This would mean that an assembly use as a main use would dictate the need for the same means of egress requirements in the accessory use. Additionally, there are inconsistencies in the proposed language.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Sarah A. Rice, CBO, Schirmer Engineering Corporation, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

302.3.1 Incidental ~~Accessory~~ use area. Occupancies that occupy not more than 10 percent of the area of any floor of a building, nor more than the tabular values for either height or area for such use shall be considered as incidental ~~accessory~~ use areas. Accessory use areas shall be classified in accordance with the main occupancy of the portion of the building in which the accessory use area is located. All code requirements shall be determined by applying those applicable to the main occupancy. Fire separations are not required between uses, except as required Table 302.3.1.

Exception: ~~1.~~ Incidental ~~accessory~~ use areas within and serving a dwelling unit are not required to comply with this section.

~~2.~~ **302.3.1.1 Assembly areas.** Accessory use areas of an assembly occupancy are not considered separate occupancies if the floor area is equal to or less than 750 square feet. Assembly areas that are accessory to Group E are not considered separate occupancies. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

TABLE 302.3.1 INCIDENTAL ~~ACCESSORY~~ USE AREAS

302.3.1.1.1 Separation. Where Table 302.3.1 requires a fire-resistance-rated separation, the Incidental ~~accessory~~ use area shall be separated from the remainder of the building with a fire barrier. Where Table 302.3.1 permits an automatic fire-extinguishing system without a fire barrier, the incidental use area shall be separated by construction capable of resisting the passage of smoke. The partitions shall extend from the floor to the underside of the fire-resistance-rated floor/ceiling assembly or fire-resistance-rated roof/ceiling assembly or to the underside of the floor or roof deck above. Doors shall be self-closing or automatic-closing upon detection of smoke. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: There has always been confusion when it comes to "accessory uses" and "incidental use"

The changes which were made last cycle to clarify that tthey are both subsets of a mixed occupancy building was a beginning.

The hierarchy of mixed occupancies

Identify the occupancies in the building

Does an occupancy < 10% of the floor area?

Then is it an accessory use area or an incidental use area

An incidental use area is a subset of accessory uses.

If yes, then fire rated separations are not required UNLESS there is a requirement in the table currently labeled as incidental use areas.

If no, then the building must be designed using Nonseparated Mixed uses (302.3.1)or Separated Mixed uses (302.3.2)

G42-03/04
308.3

Proposed Change as Submitted:

Proponent: Scott Adams/Gilbert Gonzales, Park City Fire Service District; representing Utah Fire Marshals Association/Utah Chapter ICC

Revise as follows:

308.3 Group I-2. This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care ~~on a 24-hour basis~~ of more than five persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

Hospitals
Nursing homes (both intermediate-care facilities and skilled nursing facilities)
Mental hospitals
Detoxification facilities

A facility such as the above with five or fewer persons shall be classified as Group R-3 or shall comply with the *International Residential Code* in accordance with Section 101.2.

Reason: The criteria of a 24-hour stay to trigger the I-2 occupancy classification places many of these buildings with an unlimited number of people not capable of self-preservation in Group B. We see large surgical centers labeled for 23 hour use to get around the added requirements of I occupancies. Is it really appropriate to permit an unlimited number of persons who are not capable of self-preservation in the lower classification?

Cost Impact: Will increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: The revision would have the effect of requiring these occupancies to be treated as an I-2, where many are now treated as businesses.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Don K. Davies, Salt Lake City Corporation, representing Utah Chapter of ICC, requests Approval as Submitted.

Commenter's Reason: The length of stay at these facilities is not the issue. The issue here is weather the patients can walk out or will they have to be carried out during an emergency. With the cost of hospital care escalating more surgical procedures are done as outpatient care where patients are anesthetized or are incapable for self preservation.

G44-03/04
310.1

Proposed Change as Submitted:

Proponent: Jim Bartl, Director of Code Enforcement & Wills W. Horton, CDS, Mecklenburg County Code Enforcement Department; representing Mecklenburg County Code Enforcement Department

1. Revise as follows:

310.1 Residential Group R. (No change to current text)

R-5 Live-Work Units. Residential occupancies, as defined by the International Residential Code, where a portion of the occupancy is utilized for business or mercantile use. (Typically Townhouse Construction.)

2. Add new Section as follows:

SECTION 419
LIVE-WORK UNITS

419.1 General. General construction for Group R-5 occupancies shall meet the requirements of the International Residential Code. Work area construction shall meet the applicable requirements of the International Building Codes, (Building, Fire, Electrical, Mechanical, Plumbing, & Fuel Gas), except as modified by the additional requirements of Section 419.1.1 through 419.1.12, and 419.2:

419.1.1 Accessibility. Public use areas shall meet the accessibility requirements of Chapter 11 of the IBC including site access and parking requirements.

419.1.2 Work areas. The work area use shall be located on the first or main floor only.

419.1.3 Existing construction. Existing construction conversions to Live-Work may require the AHJ, at his discretion, to solve specific code problems. Example: Floor load calculations per IBC requirements.

419.1.4 Height and area. The gross allowable area of the Live-Work unit shall be 3000 square feet and no more than three stories in height.

419.1.5 Work area limits. The work area shall occupy less than 50% of the gross allowable area of the Live-Work unit.

419.1.6 Same tenant. The same tenant or owner shall occupy both the work and living area of the unit.

419.1.7 No. of Employees. A maximum of five non-resident workers/employees shall be allowed in the Live-Work unit at any one time.

419.1.8 Heat detectors. Heat detectors, per NFPA 72, Section A 8-1.2.4, shall be installed in all unoccupied spaces. Example: Attic space.

419.1.9 Interior finish. Wall and ceiling finishes in the work area shall have a flame spread rating of 0-25 and a smoke developed rating of 0-450.

419.1.10 Means of egress. Each room of the work area shall have access to two remotely located exits or have a direct exit to the outside. If two exits are provided, a minimum of one shall be accessible.

419.1.11 Fire alarm. Each Live-Work unit shall be provided with a manual fire alarm system installed per NFPA 72.

419.1.12 Separation. No separation between the live and work area shall be required and stair construction shall not require an enclosure, however, if the stairwell

is enclosed the construction shall limit the migration of smoke.

419.2 Limitations on use. Group R-5 work function use shall be limited to business and mercantile uses limited to the following:

- Artists studios
- Barber or beautician facilities
- Business offices
- Professional offices Example: Lawyers, A/E firms, CPA's.
- Medical offices Example: Low hazard such as a Chiropractors office.
- Sale of goods or merchandise

Other work functions are permitted to be accepted by the Authority Having Jurisdiction, if the work hazard is shown to be comparable to the work functions listed above.

Reason: This code change is in response to a current trend by many communities across this country that have been incorporating the development of traditional neighborhood design within their jurisdiction. These communities have run head long into the IBC requirements resulting in many problems, consequently, we believe the revitalization of the traditional single owner Live-Work units in community planning has not been a realistic option because of the stringent "mixed use" requirements initiated by "work" functions in residential occupancies. While Live-Work units are typically residential in nature and construction type, the IRC has no place for these low-hazard non-residential functions. As a result, Live-Work must move to the IBC where either separation is imposed, or the "most extreme" occupancy requirements are imposed. These requirements are far in excess of the added risk of the Live-Work occupancy requirements we propose and effectively serve to discourage Live-Work unit development. We do not believe applying Chapter 3 of the IBC will give you the desired result that the Live-Work proposal offers because in the IBC you either separate the uses or use the most restrictive construction type. These provisions would typically push you out of a townhouse design, imposing more aggressive height and area restrictions (typically 2 stories and 7,000-sq. ft.), as well as other R-2 commercial requirements.

We do not believe this proposed code change would impact stand alone Single Family dwellings. Typically there would be no formally designated work function in the residence, as would be the case in a Live-Work unit. We anticipate the proposed code changes will be activated when someone tries to build an attached residence (typically a townhouse) under the IRC with a work function at odds with the IRC.

For years, the model codes were sheltered from this issue by local zoning ordinances, which typically precluded the mixing of uses within a residential neighborhood, much less within a residential structure. That is not the case today, as town planning models encourage mixed use, even within the residential structure. We suggest with limitations (such as the number of work occupants, square footage limitations, maximum building height, etc.) Live-Work units are a safe and affordable solution to a growing town planning problem. We are hopeful the committee will take a pro-active approach in their investigation and contemplation of this issue.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: The proposed allowable area of 3000 square feet is an arbitrary number with no technical justification. The committee had concerns regarding the lack of provisions for smoke alarms in the work area. In addition, the use of these facilities for mercantile is a concern, given the large fire load possible in such circumstances.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

John Morgan, City of Florissant, representing Missouri Association of Building Officials and Inspectors, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

310.1 Residential Group R. (No change to current text)

R-5 Live-Work units. Residential occupancies, as defined by the International Residential Code, where a portion of the occupancy is utilized for business or mercantile use. ~~(Typically Townhouse Construction.)~~

Exception: Home occupations as allowed by the locally adopted zoning code.

419.1.3 Existing construction. ~~Existing construction conversions to Live-Work may require the AHJ, at his discretion, to solve specific code problems. Example: Floor load calculations per IBC requirements.~~ The building official shall evaluate buildings constructed prior to adoption of this code section to determine compliance. The building official may accept alternatives to the requirements of this section if compliance is determined to be technically infeasible in accordance with Chapter 34 of this code.

(Portions of code change not shown remain as proposed)

Commenter's Reason: This code change would reasonably allow for work-live environments that are on the rise with the "new urbanistic" planned developments. The code requirements add additional life safety measures such as manual fire alarms, heat detectors and interior finish requirements while relieving the requirement of separation of the living space from the work space. The new section also places limitations on height and area of the structure and workspace, number of employees and limitations of the permitted uses. Further, the owner of the business must reside in the structure, thereby eliminating the possibility of a tenant that does not have control over the business operation. Typically in the work-live planned development, a work-live structure may also be used for a single-family residence without a business. This new section would allow the structure to be maintained with a residential interior design, such as allowing an open stairway but still have life safety functions in case of an emergency.

The proposed modification includes the definition of home occupation which is typically allowed in residential uses in most zoning codes. A home occupation is not a typical work-live use. A home occupation is one in which a person may have an office in their home such as an engineer or architect with no other employees, except possible a family member that lives there. A majority of the concerns brought up at the hearings in Nashville were those voicing their opposition on placing limitations on home occupations and this was not what the proponent had intended to do and the modification addresses these concerns. The second part of the modification addresses existing conditions. The original proposal allowed the building official to waive requirement at his or her discretion. We believe that such a waiver should be based on Chapter 34 for existing structures and not the sole discretion of the building official.

G45-03/04
302.1

Proposed Change as Submitted:

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

1. Revise as follows:

310.1 Residential Group R. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I. Residential occupancies shall include the following:

R-1 Residential occupancies where the occupants are primarily transient in nature, including:
Boarding houses (transient)
Hotels (transient)
Motels (transient)

R-2 Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:
Apartment houses
Boarding houses (not transient)
Congregate Living Facilities with > 16 persons
Convents
Dormitories
Fraternities and sororities
Monasteries
Vacation timeshare properties
Hotels (nontransient)
Motels (nontransient)

R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2, R-4 or I, ~~and where~~ including: buildings do not contain more than two dwelling units as applicable in Section 101.2, or adult and child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours. Congregate Living Facilities with 16 or less persons. Adult and child care facilities that are within a single-family home are permitted to comply with the *International Residential Code* in accordance with Section 101.2.

R-4 Residential occupancies shall include buildings arranged for occupancy as residential care/assisted living facilities including more than five but not more than 16 occupants, excluding staff.

Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3 except as otherwise provided for in this code or shall comply with the *International Residential Code* in accordance with Section 101.2.

2. Add new text as follows:

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

CONGREGATE LIVING FACILITIES. A building or part thereof that contains sleeping units where residence share bathroom and/or kitchen facilities.

Reason: The proposed text adds congregate living facilities to the list of facilities classified as Group R, with a further distinction when a congregate living facility is classified as a Group R-2 or R-3.

The threshold of 16 persons is consistent with the results of the most recent census, which has 98 % of all homes in the US containing less than 16 persons.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: The proposed language in the R-3 definition is not clear regarding when congregate living facilities become an R-3. The difficulty is in the reference to an I facility, with no cross-reference to R-3 in Section 308.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Sarah A. Rice, CBO, Schirmer Engineering Corporation, requests Approval as Modified by this Public Comment.

Modify proposal and reformat as follows:

R-3 Residential occupancies where the occupants are primarily permanent in nature and not classified as R-1, R-2, R-4 or I, including:

Buildings do not contain more than two dwelling units as applicable in Section 101.2~~, or~~

Congregate living facilities with 16 or ~~less~~ fewer persons

Adult and child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.

Adult and child care facilities that are within a single-family home are permitted to comply with the *International Residential Code* in accordance with Section 101.2.

(Portions of code change not shown remain as proposed)

Commenter's Reason: In the most recent census, 98% of single-family homes in the United States contain 16 persons or less. This code change provides a practical line of demarcation for these facilities that will ensure fair and reasonable housing requirements for congregate residences. This is needed since there is no practical definition for "family" with these types of facilities. To address the committee's concern over Group I, the proposed language would also cover the Group I-1 or I-2 facilities with 5 or less residents referenced to Group R-3 by Sections 308.2 and 308.3. Small day care, referenced by Section 308.5, is already listed.

G48-03/04
402
Proposed Change as Submitted:

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

Revise as follows:

402.4 Leasable spaces. All leasable spaces, except for kiosks, within a covered mall building shall be classified as a tenant space or an anchor building.

~~402.4~~ 402.5 **Means of egress.** Each tenant space, anchor building and the covered mall building shall be provided with means of egress as required by this section and this code. Where there is a conflict between the requirements of this code and the requirements of this section, the requirements of this section shall apply.

402.5.1 Tenant space means of egress. Each individual tenant shall be provided with a means of egress that discharges to the exterior of the covered mall building or into the covered mall, or a combination thereof. The occupant load of the individual tenant space shall be determined in accordance with Section 402.4.1 *(note to staff – this is the current section number)*

402.5.2 Anchor building means of egress. The required exit access and exits for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in computing the total number of occupants for the mall. The path of egress travel of malls shall not exit through anchor buildings.

> **Exception:** Where the means of egress of the mall has the capacity for the occupant load of the covered mall building and the assigned occupant load from the anchor building, a maximum of 50 percent of the occupant load of the anchor building, computed using the mall occupant load factor, shall be permitted to be included in the total number of occupants for the mall.

~~402.4.1~~ 402.5.3 **Determination of occupant load.** (No change to current text)

~~402.4.1.1~~ 402.5.3.1 **Occupant formula**. (No change to current text)

~~402.4.1.2~~ 402.5.3.2 **OLF range**. (No change to current text)

~~**402.4.1.3 Anchor buildings.** The occupant load of anchor buildings opening into the mall shall not be included in computing the total number of occupants for the mall.~~

~~402.4.1.4~~ 402.5.3.3 **Food courts**. (No change to current text)

~~402.4.2~~ 402.5.4 **Number of means of egress.** (No change to current text)

~~402.4.3~~ 402.5.5 **Arrangements of means of egress.** (No change to current text)

~~**402.4.3.1 Anchor building means of egress.** Required means of egress for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in determining means of egress requirements for the mall. The path of egress travel of malls shall not exit through anchor buildings. Malls terminating at an anchor building where no other means of egress has been provided shall be considered as a dead-end mall.~~

~~402.4.4~~ 402.5.5.1 **Distance to exits.** (No change to current text)

~~402.4.5~~ 402.5.6 **Access to exits.** Where more than one exit is required, they shall be so arranged that it is possible to travel in either direction from any point in a mall to separate exits. The minimum width of an exit passageway or corridor from a mall shall be 66 inches (1676 mm).

~~**Exception:** Dead ends not exceeding a length equal to twice the width of the mall measured at the narrowest location within the dead-end portion of the mall.~~

~~402.4.5.1~~ 402.5.6.1 **Exit passageway enclosures.** (No change to current text)

~~402.4.6~~ **402.5.7 Dead ends.** The maximum length of dead ends within a mall shall not be greater than twice the width of the mall, measured at the narrowest location within the dead-end portion of the mall. Malls terminating at an anchor building where no other means of egress has been provided shall be considered as a dead-end mall.

~~402.4.6~~ 402.5.8 **Service areas fronting on exit passageways.** (No change to current text)

~~402.5~~ 402.5.9 **Mall width.** (No change to current text)

~~402.5.1~~ 402.5.9.1 **Minimum width.** (No change to current text)

402.6 Types of construction. The area of any covered mall building, including anchor buildings, of Type I, II, III and IV construction, shall not be limited provided the covered mall building and attached anchor buildings and parking garages are surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm) and the anchor buildings do not exceed three stories in height. The height of any covered mall building, including anchor buildings shall be in accordance with Table 503, as modified by Section 504. The allowable height and area of anchor buildings greater than three stores in height shall comply with Section 503, as modified by Sections 504 and 506. The construction type of open parking garages and enclosed parking garages shall comply with Sections 406.3 and 406.4, respectively.

Reason: The proposed revisions reflect how today's malls function. The once clear-cut distinction between a tenant and an anchor building is relatively gone. Anchor buildings were historically the largest tenants in a covered mall building, located at the perimeter of many small tenants. Today there are tenant spaces located within the body of a covered mall building that occupy as much, or more, area as some "anchor buildings." Tenants today often occupy multiple stories within a covered mall building.

The current code text requires that the occupants of an anchor building cannot egress through the covered mall building. Even if the covered mall buildings egress system has the capacity to accommodate the occupant load of both the tenants in the covered mall building and the anchor building, the code would not allow this.

The proposed language:

- Gives the designer the choice of calling any leasable space in a covered mall building an anchor building or a tenant, and design it and it's means of egress accordingly, and
- Allows up to 50% of the occupants of an anchor building to egress through the covered mall building, when the egress system has the capacity.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: No technical justification has been provided to allow egress from an anchor store through a mall. This could create problems when the anchor store is open and the mall is closed.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Sarah A. Rice, CBO, Schirmer Engineering Corporation, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

402.5.3.1 Gross leasable area: The occupant load of a tenant space can either be directly to the exterior of the building or to the interior of the buildings

402.5.3.2 ~~**402.5.3.1**~~ **Occupant formula.** In determining required means of egress of the mall, the number of occupants for whom means of egress are to be provided shall be based on gross leasable area of the covered mall building (excluding anchor buildings) and the occupant load factor as determined by the following formula.

OLF = (0.00007) (GLA) + 25 (Equation 4-1)

where:
OLF = The occupant load factor (square feet per person).
GLA = The gross leasable area (square feet).
402.4.1.2 OLF range.

The occupant load factor (OLF) is not required to be less than 30 and shall not exceed 50.

(Remainder of code change as proposed)

Commenter's Reason: The proposed revisions are in response to the comments made by the code development committee. There appears to be agreement that today's covered mall buildings do not neatly fit into the mold of the covered mall building by which the current code provisions were modeled.

There need to be recognition of the current design practices used. If a owner chooses to include the occupant load of an anchor store or to have tenant spaces discharge directly to the exterior of a building, vs to an interior mall, there should not be a penalty and maybe even credit. The approach outlined in this proposal addresses the potential design configurations.

The proposed revisions reflect how today's malls function. The once clear-cut distinction between a tenant and an anchor building is relatively gone. Anchor buildings were historically the largest tenants in a covered mall building, located at the perimeter of many small tenants. Today there are tenant spaces located within the body of a covered mall building that occupy as much, or more, area as some "anchor buildings." Tenants today often occupy multiple stories within a covered mall building.

The current code text requires that the occupants of an anchor building cannot egress through the covered mall building. Even if the covered mall buildings egress system has the capacity to accommodate the occupant load of both the tenants in the covered mall building and the anchor building, the code would not allow this.

The proposed language:

1. Gives the designer the choice of calling any leasable space in a covered mall building an anchor building or a tenant, and design it and it's means of egress accordingly, and
2. Allows up to 50% of the occupants of an anchor building to egress through the covered mall building, when the egress system has the capacity.

G49-03/04
402.1

Proposed Change as Submitted:

Proponent: Gene Boecker, Code Consultants, Inc.

Revise as follows:

402.1 Scope. The provisions of this section shall apply to buildings or structures defined herein as covered mall buildings not exceeding three floor levels at any point nor more than three stories above grade. The height in feet shall not be limited provided there are no occupiable floors more than 75 feet above the lowest level of fire department access. Except as specifically required by this section, covered mall buildings and attached anchor buildings and attached garages shall meet applicable provisions of this code.

Exceptions:
1. and 2. (No change to current text)

Reason: The first change addresses the need to recognize that the height in feet can be a determining factor for these types of facilities.

The second change is a simple recognition that the section also addresses the anchor buildings and attached garages – not only the covered mall building.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: This is an unnecessary exception to the height and area tables. No reason has been provided that justifies this exception for malls.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gene Boecker, Code Consultants, Inc., requests Approval as Modified by this Public Comment.

Modify proposal as follows:

402.1 Scope. The provisions of this section shall apply to buildings or structures herein as covered mall buildings not exceeding three floor levels at any point nor more than three stories above grade. ~~The height in feet shall not be limited provided there are no occupiable floors more than 75 feet above the lowest level or fire department access~~. Except as specifically required by this section, covered mall buildings, ~~and~~ attached anchor buildings and attached garages shall meet applicable provisions of this code.

Exceptions:
1. and 2. (No change to current text)

Commenter's Reason: There was no specific opposition noted to the second proposed change to the section. This amendment strikes the sentence that caused concern but retains the text that identifies attached anchor buildings and attached parking garages as being subject to the other sections of the code. Without this reference, it is unclear why the covered mall building is singled out and the other elements are ignored since the code section addresses all three of these elements as they relate to one another. The "and" was deleted to correct an original typographical error, affording proper grammatical use.

G51-03/04
402.7.1

Proposed Change as Submitted:

Proponent: Ed Schultz, Code Consultants, Inc. (CCI); representing CCI

Revise as follows:

402.7.1 Attached garage. An attached garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered mall building by a fire barrier having a fire-resistance rating of at least 2 hours.

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

Reason: Covered mall buildings have numerous loading areas around its exterior. Typically access to these loading dock areas are directly from the mall ring road that is also used by passenger vehicles. When a parking structure is designed at a mall, the structure may span across the roads that provide access to the loading docks. Trucks must drive through a portion of the parking structure in order to access the loading dock areas which are not located in the parking structure.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: Given that the fire department will require some truck access provisions, it is unnecessary to place this additional prescriptive language in the code.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Ed Schultz, Code Consultants, Inc., requests Approval as Modified by this Public Comment.

Modify exception 2 of proposal as follows:

2. ~~Truck access of a transient nature is permitted through the parking garage~~ Parking, loading or unloading of trucks shall be prohibited within the garage.

Commenter's Reason: At the code hearings the concern was raised over the specific language that it might prevent fire department vehicle access. The reverse is the intent. The code change is intended to address the need to allow truck movement through a garage while keeping with its intended application for only passenger vehicles to be parked in the garage structure. The revised text states the desire to restrict higher fuel loads that are present in commercial trucks if they were to park and load or unload in the structure but also allow those trucks to drive through the garage to get to loading areas. Many parking structures are designed to allow for the mall "ring road" to pass under a portion of a parking structure. This new wording would clarify that this design concept is acceptable.

G55-03/04
403.3.1

Proposed Change as Submitted:

Proponent: Jason T. Thompson, National Concrete Masonry Association; representing Masonry Alliance for Codes and Standards (MACS)

1. Revise as follows:

403.3.1 Type of construction. The following reductions in the minimum construction type allowed in Table 601 shall be allowed as provided in Section 403.3:
1. For buildings not greater than 420 feet in height, Type IA construction shall be allowed to be reduced to Type IB.
2. In other than Groups F-1, M and S-1, Type IB construction shall be allowed to be reduced to Type IIA.
3. The height and area limitations of the reduced construction type shall be allowed to be the same as for the original construction type.

403.3.2 Shaft enclosures. For buildings not greater than 420 feet in height, ~~T~~the required fire-resistance rating of the fire barrier walls enclosing vertical shafts, other than exit enclosures and elevator hoistway enclosures, shall be reduced to 1 hour where automatic sprinklers are installed within the shafts at the top and at alternate floor levels.

2. Add new text as follows:

403.15 Buildings greater than 420 feet in height. Buildings greater than 420 feet in height shall comply with the requirements of Sections 403.15.1 through 403.15.6.

403.15.1 Floor and roof construction. Floor and roof construction, including supporting beams and joists, shall have a fire-resistance rating of not less than 3 hours.

Exception: Compliance with the ASTM E119 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases shall only be required for the first two hours for floor and roof construction.

403.15.2 Exit enclosures. Exit stairs and exit passageways shall be enclosed as required by Sections 1019.1 and 1020.3, respectively. The fire resistance rating of the exit enclosures shall not be less than 3 hours.

403.15.3 Area of refuge. Each area of refuge specified in Section 1007.6 shall be separated by fire barriers

having a fire resistance rating of not less than 3 hours in accordance with Section 706.

403.15.4 Elevator hoistway enclosures. Elevators used as an accessible means of egress in accordance with Section 1007.4, and elevators provided for fire department emergency access in accordance with Section 3002.4 shall have hoistway enclosures with a fire resistance rating of not less than 3 hours constructed in accordance with Chapter 7.

403.15.5 Separation distance between exits. The required separation distance between exits prescribed in Section 1014.2.1 shall not be allowed to be reduced in accordance with Exceptions 1 and 2. In no case shall the exit enclosure walls be separated by less than 30 feet at any point as measured in a straight line.

403.15.6 Hose stream test for walls. Walls enclosing shafts, including exit enclosures and elevator hoistway enclosures, and areas of refuge shall be tested in accordance with the hose stream test specified in Section 11.3 of ASTM E119.

Reason: The events at the World Trade Center on 2/26/1993 and 9/11/2001 show that taller buildings occupied by a large number of people represent likely targets for terrorists. Because of the increased risk of catastrophic damage to structural systems of such buildings, the structural systems should be provided with increased fire resistance in order to perform their intended function for the code specified period of time. During the development of the National Fire Protection Association's (NFPA) Building Construction and Safety Code (NFPA 5000), this increased risk was recognized. Therefore, NFPA 5000 requires that buildings greater than 420 feet in height be of a higher type of construction than permitted by the International Building Code (IBC). Under NFPA 5000, columns are required to have a fire resistance rating of 3 hours, compared to 2 hours in the IBC. The change proposed to Section 403.3.1 will require that columns meet the requirements of Type IA construction with no reduction for sprinkler protection. Thus, columns will need to have a fire resistance rating of not less than 3 hours.

Because of the importance that shaft enclosures play in preventing floor-to-floor fire spread in high-rise buildings, NFPA 5000 does not permit the 2-hour rating of shafts to be reduced due to the presence of sprinklers. The change proposed to Section 403.3.2 will remove the sprinkler trade-off for buildings greater than 420 feet in height. Thus, all shafts in buildings exceeding 420 feet in height will be required to have the more robust fire resistance rating of at least 2 hours.

Because of the increased risk of very tall buildings, the terrorist threat has made it necessary to require special life safety and property protection features in such buildings. Therefore, a new Section 403.15 is proposed to address these features in one location in the code. The following paragraphs provide individual reason statements for each of the four subsections to proposed new Section 403.15.

403.15.1 - For many decades, building codes in this country have required additional fire protection for a column supporting more than one floor, compared to a column supporting only one floor or the roof. This approach seems to make sense when considering the structural importance of the former column to the latter. However, it ignores the potential for a floor or roof that has less fire resistance than the column supporting it to collapse, most likely resulting in a total catastrophic progressive collapse of the structure. Proposed Section 403.15.1 will require that floors and roofs have a minimum 3-hour structural fire resistance rating, which is equal to the rating required for the columns. The proposed 3-hour requirement for floors and roofs only applies to the ability of the floor or roof to sustain the applied load during the 3-hour period. The other ASTM E119 fire endurance test provisions that require 1) the assembly not develop conditions on the unexposed surface that will ignite cotton waste, and 2) the average unexposed surface temperature not rise by more than 250° F above its initial temperature would only apply for the first 2 hours. The suggested requirement will provide better protection against progressive collapse.

403.15.2 – 403.15.4 - The investigation into the cause of the World Trade Center collapse has raised questions regarding the robustness of the materials used for shaft enclosure walls. It was implied that if more impact resistant materials had been used to construct these enclosures, more people would have been able to escape from the floors above where the airplanes impacted. While the issue of robustness is difficult to address directly, it can be addressed indirectly by requiring additional fire resistance for exit passageways, exit stairs, and shafts enclosing key life-safety equipment. Proposed Section 403.15.2 requires that exit passageways and exit stair enclosures be 3-hour rated. Proposed Section 403.15.3 requires that areas of refuge be enclosed with 3-hour construction. If exit stairs are required to be in 3-hour enclosures, it seems logical to require an area of refuge to have the same protection, since people with disabilities may be the last to be evacuated from the building. Section 403.15.4 will require that elevators used as an accessible means of egress and elevators provided for fire department emergency access be in hoistway enclosures having a fire resistance rating of not less than 3 hours. In an emergency, the fire department elevator may be needed to evacuate people from the building and it deserves the same protection as exit stairs. This change, when combined with that in proposed Section 403.15.6, will result in enclosure walls that are more robust.

403.15.5 - The investigation into the cause of the World Trade Center collapse has also raised questions regarding remoteness of exit stairs. Building codes have attempted to address the remoteness issue in the recent past by requiring exit doors (i.e., entrances to exit stairs) be located no closer to each other than one-half the maximum overall diagonal dimension of the floor being served. However, this requirement has been diluted by exceptions that include 1) a sprinkler trade-off that permits the separation distance to be reduced from one-half to one-third and 2) a provision that allows the required separation distance to be measured along the path of travel through a one-hour fire resistance rated corridor. Each of these has the effect of allowing the shafts enclosing exit stairs to be closer together. Proposed Section 403.15.3 prohibits use of these two strategies to reduce the separation distance between exit stairs for buildings greater than 420 feet in height. The last sentence of proposed Section 403.15.5 has been extracted from the first exception to Section 1004.2.2.1 of the 2000 IBC.

403.15.6 - Since its inception over 80 years ago, the ASTM E119 fire endurance test has required that walls be subjected to the "impact, erosion and cooling effects of a hose stream." The ASTM fire test standard permits the hose steam test to be applied to 1) the wall at the conclusion of the fire test to determine its rating classification time period or to 2) a duplicate wall that has been subjected to the fire test for only one-half of the wall's hourly rating classification, not to exceed one hour. Over the past 15 or 20 years, there has been considerable debate within ASTM and in other venues regarding the purpose of the hose stream test. Some say that it is to demonstrate that the wall will withstand the impact of a stream of water from a firefighter's hose; whereas, others maintain that the hose stream test is merely a way of subjecting the wall to an out-of-plane impact load. Neither of the two camps has been successful in convincing the other of their position.

One thing that no one can refute, in order to pass the hose stream test conducted at the end of the ASTM E119 fire test used to determine the wall's fire resistance rating, the wall needs to be more robust than a wall tested according to the hose stream test conducted on a duplicate wall assembly fire tested for only one half the fire resistance rating. For this reason, proposed Section 403.15.6 requires that all shafts and areas of refuge be enclosed with walls that have demonstrated their ability to meet the more stringent hose stream test criteria which requires that it be applied at the conclusion of the fire endurance test.

Cost Impact: Will increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: No test data or other analysis was provided to show that additional exit time is needed. Not all of the tall buildings are at the same level of risk as that represented by the failure in the supporting statement. Where there are signature buildings at a higher level of risk, the ICC Performance Code can be utilized. Given that studies are incomplete on the performance of the WTC, we should be careful in making drastic code modifications.

Assembly Action: **Approved as Modified**

Modification: Modify the proposed change by retaining part 1 and deleting part 2 of the proposal.

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted and an assembly action was successful.

Public Comment 1:

David T. Biggs, Ryan-Biggs Associates, Inc., requests Approval as Modified by the Assembly Action as published in the ROH.

Commenter's Reason: I agree with the Assembly Action to retain Part 1 of the proposed code change G55-03/04. As will be mentioned by others, we should react to the World Trade Center (WTC) disaster of September 11, 2001 with some definite changes to our codes. While the on-going study of the disaster has not been completed, there are lessons we have already been learned and should be addressed. The study of the 1995 Murrah Federal Office bombing in Oklahoma City pointed to the vulnerability of transfer girder systems in building structures. It also indicated that modern seismic design would have limited the damage due to progressive collapse if the technology had been required to be used on that building. We have the technology and the codes should change.

Similarly, we have greater knowledge from September 11, 2001 during which we had three significant collapses at the WTC; the two towers and WTC 7. There is no doubt greater fire protection in the towers might have extended the life of the damaged towers. For WTC 7, a 47-story building that collapsed under fire, we know that the water lines feeding the sprinkler system were disabled by the collapse of the adjacent towers. In that case, the passive systems are the primary protection for the building and the fire fighters. Due to the massive destruction caused by the tower collapses, WTC 7 was left to burn; so, no fire fighters were injured but the collapse of WTC 7 led to significant additional damage to the surrounding buildings.

It is true that historically, fires do not usually cause a steel-framed building to collapse even if the sprinklers are disabled. However, it can and did happen at WTC 7.

The proposal to increase fire protection of the columns, girders and trusses as well as shaft enclosures on high-rise buildings is an important first step to greater safety for occupants, fire fighters and buildings and can be done now.

Public Comment 2:

Jim Burns, New York State Fire Administrator, representing National Association of Fire Marshals, requests Approval as Modified by Assembly Action as published in the ROH.

Commenter's Reason: The National Association of State Fire Marshals (NASFM) and its Partnership for Safer Buildings supports the Assembly Action to approve Part 1 of this code change proposal as it was submitted, with the modification of removing Part 2. We believe this is responsive to the concerns that our Partnership for Safer Buildings has raised about this issue. Our assessment of fire protection features provided for high-rise buildings has indicated that the IBC does not adequately incorporate both active and passive fire protection measures. Our Codes Assessment Subcommittee has stated: "If a sprinkler system were to fail, as it did in the case of the World Trade Center, then the occupants would stand little chance of reaching safety in the time allotted by the fire-resistance rating of these structural elements."

We are very concerned about the erosion of built-in passive fire protection, which has occurred over the last 20 years as a response to automatic sprinkler system trade-offs. We believe there should be an appropriate balancing of both active and passive fire protection systems, especially in very tall high-rise buildings greater than 420 feet in height. If approved, Part 1 of this code change would not allow a reduction in the type of construction from Type IA to Type IB for these very tall buildings which would otherwise result in a reduction in structural fire resistance, nor would it allow a reduction in the fire resistance ratings for shaft enclosures from 2 hours to 1 hour. We believe these fire resistance ratings are critical to such very tall buildings, especially for the challenges these buildings pose to fighting fires above 420 feet. The responding fire department will face many difficult challenges in not only fighting a fire at these great heights, but also in rescuing and/or evacuating the occupants that may be trapped above the fire floor. Additional fire resistance will greatly help to assure that the building's structural integrity will be maintained until all fire fighting efforts and evacuation measures have been taken to bring the building fire under control and to move the occupants to areas of refuge or out of the building completely. Should the sprinkler system not operate properly or should it be turned off because of areas being remodeled or for whatever reason, it is essential that the building's structural elements be able to resist an uncontrolled fire, especially one that can not be suppressed by fire department pumpers located on the street level.

When fires occur above 420 feet, the building must be able to support the water supply and provide adequate pressure and adequate volume for fire fighting purposes and for the automatic sprinkler system. This causes the building to rely upon internal systems such as fire pumps, emergency generators and on-site water supplies to assure that adequate water will be available to the upper floors of these very tall buildings.

Since these very tall buildings pose significant risks to the occupants, as well as to the responding fire department, NASFM strongly believes that it is essential to maintain a significant level of built in fire resistive protection in order to not only assure structural integrity, but to also prevent fire spread from floor to floor so that the fire department will have a better chance of containing the fire.

In conclusion, NASFM strongly urges the ICC voting membership to support the Assembly Action taken during the hearings in Nashville and approve Part 1 of this code change proposal as it was submitted, with the modification of removing Part 2. This will restore a reasonable degree of balance between active and passive fire protection systems for protecting the lives and property in very tall high-rise buildings. For more information about NASFM and the Partnership for Safer Buildings, go to our website at www.firemarshals.org.

Public Comment 3:

John LaTorra, City of Redwood City, representing Peninsula Chapter of ICC, requests Approval as Modified by the Assembly Action as Published in the ROH.

Commenter's Reason: The ICC Peninsula Chapter strongly agrees with the Assembly Action vote at the General Code Development Committee for "Approved as Modified", and opposed the "Disapproval" recommendation of the General Code Development Committee. The modification we support is to retain Part 1 and delete Part 2 of the proposal.

Our world is a different place following the events at the World Trade Center (WTC) in 1993 and 2001, and our codes should reflect that. The two revisions in Part 1 that will not permit a reduction in the type of construction from Type IA to a Type IB for buildings over 420 feet in height, and will not permit a reduction in the fire rating for shaft enclosures from 2 hours to 1 hour when sprinklers are provided for buildings over 420 feet in height. Buildings in this height range can not be supported by the fire department pumping into the standpipe and sprinkler systems, should a fire occur on a floor above 420 feet. That is the practical height limitation for fire department pumper operations. It is only logical that these very tall buildings should be provided with sufficient fire protection in order to prevent a total burn out on any floor located above 420 feet. Such buildings are approximately 35 stories or greater in height and represent a significant fire fighting problem should a fire get out of control. Not only is there considerable fire load in a building of such height, but there is also a large number of occupants who must be evacuated or relocated to safe areas of refuge within the building.

By adopting this modification, the IBC will be duly recognized as the standard for tall buildings. NFPA 5000 contains provisions that mirror those found in Part 1 of G55-03/04. These provisions were one of the reasons given by the California Building Standards Commission in consideration of adoption of NFPA 5000 over the IBC. The inclusion of this proposed modification, along with the other IBC fire safety provisions, will establish the IBC as the model building code for very tall buildings.

Following the September 11th attack on the WTC, a report by FEMA's Building Performance Study Team included the following two "Lessons for Building Design", 1) Consider redundancy in building design, and 2) Consider fire resistance in relation to importance of structural members. We believe that the small increase in fire protection for columns and shaft enclosures contained in Part 1 of G55-03/04 is an appropriate first step toward meeting these two goals.

Public Comment 4:

Sheila Lee, City of Santa Clara, California, representing California Building Officials, requests Approval as Modified by the Assembly Action as published in the ROH.

Commenter's Reason: California Building Officials (CALBO) urges "Approved as Modified" to adopt Part 1 of code change G55-03/04 which was the Assembly Action vote at the General Code Development Committee in Nashville, TN. Passage of Part 1 is important to building officials who are opposed to the adoption of NFPA 5000 in California. During California's adoption process, code requirements similar to Part 1 that are contained in the NFPA 5000 Building Code were heralded as proof that the NFPA building code provided better protection for firefighters. We believe that placement of similar high rise provisions in the IBC, in addition to its other fire safety provisions, will make the IBC an even more preferable building code for ultra-tall buildings. In additional to this political consideration, we also offer the following technical justification for our support of the Assembly Action.

The 420 feet upper height limit was chosen because it is the practical height at which the fire service can properly charge sprinkler and standpipe systems. Thus, for buildings higher than 420 feet, sprinkler systems are much less reliable and as such, fire ratings for structural members should not be reduced because of the installation of a sprinkler system, as is presently permitted in Section 403.3.1 of the IBC. Likewise, it is not appropriate to reduce the protection of shaft enclosures by 1 hour where sprinkler systems are installed in buildings over 420, as is permitted in Section 403.3.2.

It is important to note that an on-site water supply is only required for high rise buildings in locations that are required to comply with the structural design criteria for Seismic Design Categories C, D, E, or F. Thus, there are many areas outside of California that would not require an on-site water supply for any height of high rise buildings. It should also be noted that the minimum water supply duration for the required on-site water supply is only 30 minutes. Obviously, the building has to rely on the responding fire department to supplement its water supply. Fire pumps are also needed to supply the necessary flows and pressures to the standpipe system and sprinkler system on the upper floors of a high rise building. Wisely, the IBC does require such fire pumps be provided with standby power if the pumps are electrically driven, unless the pumps are powered by diesel drivers. In either case, there is a reliability issue as to whether the fire pump and/or the standby power supply system will be able to function when needed.

If, during a fire, the water supply to the building is interrupted or if there is a power failure to the building or an area wide blackout and the standby generator or the diesel drive fire pump fails to operate, the building must be able to withstand the fire until it burns out. Keeping the shaft fire resistance ratings at 2 hours will help to contain the fire to the floor of origin since the floors are also required to have 2 hour fire resistance ratings. Keeping the structural frame and bearing walls at a 3 hour fire resistance rating as required for Type IA construction will also provide a factor of safety to the overall structural stability of the building. This is important in order to prevent catastrophic structural collapse of the upper floors which could also trigger a "pancaking" failure similar to that which occurred to the World Trade Center towers.

As has become evident, very tall buildings are more vulnerable to fire and are also a more desirable target for terrorists. Not allowing a reduction in the basic fire resistance of the building is a prudent fire safety strategy, especially if the occupants become trapped above the fire as they did in the World Trade Center disaster.

Public Comment 5:

Jason J. Thompson, National Concrete Masonry, representing Masonry Alliance for Codes and Standards, requests Approval as Modified by Assembly Action as Published in the ROH.

Commenter's Reason: The purpose of this Public Comment is to request that Code Change Proposal G55-03/04 be Approved as Modified by approving Part 1 only. This is consistent with the Assembly Action taken during the hearings in Nashville. Part 1 does not allow a reduction in the type of construction for high rise buildings from Type IA to Type IB for those buildings that are greater than 420 feet in height. It also does not allow a reduction in the fire resistance rating from 2 hours to 1 hour for shaft enclosures when sprinklers are installed in the shaft. These reductions would apply to high rise buildings containing any occupancy groups.

The impact of this Public Comment, if it is approved, would be to increase the required fire resistance ratings of various building construction elements in high rise buildings greater than 420 feet tall in accordance with the following:

Construction Element	IA	IB
Structural Frame	3	2
Roof only	2	1
Bearing Walls		
Exterior	3	2
Interior	3	2
Roof only	2	1
Shaft Enclosures	2	1
Floors	2	2
Roofs	1½	1

Basically, the difference in the required fire resistance ratings between Type IA and IB construction for the various structural elements is one hour.

It is important to note that buildings greater than 420 feet in height can not be supported by the fire department pumping into the standpipe and sprinkler systems should a fire occur on a floor above 420 feet. That is the practical height limitation for fire department pumper operations. Thus, such buildings must be able to support their fire protection systems on their own in order to prevent a total burn out on any floor located above 420 feet. Such buildings are approximately 35 stories or greater in height and represent a significant fire fighting problem should a fire get out of control. Not only is there considerable fire load in a building of such height, but there is also a large number of occupants who must be evacuated or relocated to safe areas of refuge within the building.

We feel very strongly that Code Change Proposal G55-03/04 should be Approved as Modified by accepting Part 1 only. This would provide greater assurance (factor of safety) that the fire resistance of the structural frame in very tall high rise buildings will be adequate to sustain a total burn out at a minimal increase in cost. This should also help to prevent the type of disaster that occurred at the World Trade Center. And it is consistent with the Assembly Action taken at the hearings in Nashville. Therefore, we urge the ICC Class A voting members to approve this Code Change Proposal as modified in accordance with this Public Comment.

Public Comment 6:

Rick Thornberry, PE, The Code Consortium, Inc., representing Alliance for Fire and Smoke Containment and Control, requests Approval as Modified by Assembly Action as published in the ROH.

Commenter's Reason: The Alliance for Fire and Smoke Containment and Control (AFSCC) believes in a balanced design approach to fire and life safety in buildings. This means that there should not be an over reliance on any single fire protection strategy or method incorporated to satisfy minimum code requirements for providing a reasonable level of fire and life safety. In this case, we believe this code change proposal attempts to achieve a better balance in the fire protection provisions for these super high rise buildings that exceed 420 feet in height. These buildings represent

a very significant fire safety challenge, especially to the responding fire department. Basically, fire fighting efforts which occur on floors above 420 feet can not be adequately supported, if at al, by fire department pumpers located at the street level. So the building must be capable of supplying the necessary water pressure and flows to support not only the automatic sprinkler system, but also the fire fighters using the standpipes.

Under those conditions we believe that reliance on the automatic sprinkler system should be balanced against built-in passive protection such as fire resistance and compartmentation. Part 1 of this code change proposal attempts to do that by not permitting the reduction in types of construction from Type IA to IB for these very tall sprinklered high rise buildings. Currently, this section of the IBC will allow the structural frame to be reduced from a 3 hour fire resistance rating to 2 hours. It will also allow shaft enclosures to be reduced from 2 hour fire resistance ratings to 1 hour. We don't believe that these fire resistance ratings should be reduced, especially since we know that automatic sprinkler systems fail to operate in approximately 1 out of every 6 fires that occur in sprinklered buildings. This statistic has been verified by an NFPA study of a recent 10 year period of automatic sprinkler system performance in all types of buildings and all occupancies. In such very tall buildings it would not be unusual for the automatic sprinkler system to be shut down on several floors at any given time when tenant improvements or build-outs are underway. Also, diesel fire pumps may fail to start if not adequately maintained. During power outages the emergency generators powering the electric drive fire pumps may fail to start or may fail to continue to provide the necessary power after several hours of operation if not adequately maintained.

We believe that too much is at stake to allow such reductions in fire resistance ratings for these very tall buildings. We are especially concerned about occupants who may be located above the fire floor where they will be at much greater risk during a fire, especially if it occurs soon after a seismic event. Evacuation and rescue for those occupants is extremely difficult to accomplish in a reasonable time frame. We should not risk structural collapse or premature failure of shaft enclosures in these very tall buildings. Therefore, we firmly believe that the ICC voting membership should support the Assembly Action taken in Nashville and approve this code change proposal as modified by approving Part 1.

Public Comment 7:

Martin Von Raesfeld, City of Santa Clara, California Fire Department, requests Approval as Modified by Assembly Action as published in the ROH.

Commenter's Reason: The National Association of State Fire Marshals (NASFM) and its Partnership for Safer Buildings supports the Assembly Action to approve Part 1 of this code change proposal as it was submitted. We believe this is responsive to the concerns that our Partnership for Safer Buildings has raised about this issue. Our assessment of fire protection features provided for high-rise buildings has indicated that the IBC does not adequately incorporate both active and passive fire protection measures. Our Codes Assessment Subcommittee has stated: "If a sprinkler system were to fail, as it did in the case of the World Trade Center, then the occupants would stand little chance of reaching safety in the time allotted by the fire-resistance rating of these structural elements."

We are very concerned about the erosion of built-in passive fire protection, which has occurred over the last 20 years as a response to automatic sprinkler system trade-offs. We believe there should be an appropriate balancing of both active and passive fire protection systems, especially in these very tall high rise buildings which are greater than 420 feet in height. If approved, Part 1 of this code change would not allow a reduction in the type of construction from Type IA to Type IB for these very tall buildings which would otherwise result in a reduction in structural fire resistance, nor will it allow a reduction in the fire resistance ratings for shaft enclosures from 2 hours to 1 hour. We believe these fire resistance ratings are critical to such very tall buildings, especially for the challenges these buildings pose to fighting fires above 420 feet. The responding fire department will face many difficult challenges in not only fighting a fire at these great heights, but also in rescuing and/or evacuating the occupants that may be trapped above the fire floor. Additional fire resistance will greatly help to assure that the building's structural integrity will be maintained until all fire fighting efforts and evacuation measures have been taken to bring the building fire under control and to move the occupants to areas of refuge or out of the building completely. Should the sprinkler system not operate properly or should it be turned off because of areas being remodeled or for whatever reason, it is essential that the building structural elements be able to resist an uncontrolled fire, especially one that can not be supported by fire department engines located on the street level.

When fires occur above 420 feet, the building must be able to support the water supply and provide adequate pressure and adequate volume for fire fighting purposes and for the automatic sprinkler system. This causes the building to rely upon internal systems such as fire pumps and emergency generators and on-site water supplies to assure that adequate water will be available to the upper floors of these very tall buildings.

Since these very tall buildings pose significant risks to the occupants, as well as to the responding fire department, NASFM strongly believes that it is essential to maintain a significant level of built in fire resistive protection in order to not only assure structural integrity, but to also contain fire spread from floor to floor so that the fire department will have a better chance of preventing catastrophic fire spread.

In conclusion, NASFM strongly urges the ICC voting membership to support the Assembly Action taken during the hearings in Nashville and approve Part 1 of this code change as submitted. This will restore a reasonable degree of balance between active and passive fire protection systems for protecting the lives and property in very tall high-rise buildings. For more information about NASFM and the Partnership for Safer Buildings, go to our website at www.firemarshals.org.

Public Comment 8:

Gregory Nicholls, City of Mason, Ohio, representing Ohio Building Officials Association, requests Disapproval.

Commenter's Reason: There was no substantiation, test data, or scientific analysis to base this code change, as noted in the Report of the Public Hearing. The Committee recognized that code changes need to have basis in fact and cannot be knee-jerk reactions to single-case occurrences. Comparison to the World Trade Center event is not relevant, as it was a terrorist attack and not an accident. Comparison to NFPA 5000 is not relevant. Also, there is no evidence that this code change would have prevented its collapse. Code changes, code interpretation, and code enforcement must be based in fact and not emotion. Please disapprove this code change, in both parts.

G56-03/04
403.3.3

Proposed Change as Submitted:

Proponent: Marcelino Iglesias, State of New Jersey, Department of Community Affairs

Add new text as follows:

403.3.3 Spray-on fireproofing. Spray-on fireproofing shall not be used on lightweight structural members that are used as primary load-bearing members. Primary load-bearing members are load-bearing members that support other structural members, such as, girders, spandrels, beams and columns.

Reason: The smaller surface area of lightweight structural members diminishes the effectiveness of spray-on fireproofing. The area provides a smaller surface to apply the spray-on fireproofing, which reduces the performance of the member in a fire condition.

Cost Impact: Will increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: The proponent did not provide compelling justification for reduction in requirements.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Marcelino Iglesias, State of New Jersey, requests Approval as Submitted.

Commenter's Reason: This proposed change was submitted with a package of changes to address building issues as a result of the tragedy at the World Trade Center. The consensus of the Code Development Committees and the membership in general has been to take the "wait and see" approach until the NIST Report on the WTC is published later this year. It is our belief that this is an incorrect approach. We think that "what happened" and "what needs to be done about it" are well understood. Our concern is that there is technical work to be done on this issue and that work does not need to wait for the NIST Report to be published. We think that the work on these issues can begin now.

The supporting statement published with the original code change proposal accurately reflects our position on the change. Based on all of the preliminary reports issued after the WTC tragedy, the "bad actor" was the spray-on fireproofing on the lightweight steel bar joists. The committee's reason for disapproval was "The proponent did not provide compelling justification for reduction in requirements." This is not a reduction in the requirements thus no compelling reason for the reduction is necessary. It is for these reasons that we respectfully request the membership to vote for G56-03/04 as submitted.

G58-03/04
403.13

Proposed Change as Submitted:

Proponent: Vickie J. Lovell; representing Air Movement and Control Association

1. Add new text as follows:

403.13 Smoke control. A smoke control system, designed in accordance with Section 909, is required to restrict the movement of smoke in the general area of the fire origin and maintain means of egress in a usable condition.

2. Revise as follows:

403.13.1 Smokeproof exit enclosures. Every required stairway serving floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall comply with Sections 909.20 and 1019.1.8, or other provisions in accordance with Section 909 shall be required in order to maintain the exit enclosure in usable condition.

Reason: Means to control smoke should be required for high-rise buildings, as is already required in the IBC in underground buildings, atriums, and covered mall buildings. Smoke control systems have been required in nearly two thirds of the country for over a decade. During the final hearing for the 2003 IBC, the majority of the voting membership voted to support engineered smoke control in high-rise buildings, narrowly missing the two thirds majority required to overturn the committee's recommendation for disapproval. Clearly, many building officials recognize the obvious problem with tall buildings and the challenge of controlling smoke.

Certain fires in North America during the past 40 years have demonstrated that serious fires can occur in modern high-rise buildings, that these fires can generate tremendous quantities of smoke, and that smoke can spread rapidly throughout these buildings.

Automatic sprinkler systems have a good track record in controlling fire, and for that reason are being installed in all types of high-rise buildings. However, in the fire protection community there are three conflicting opinions regarding smoke development and control in buildings protected by automatic sprinkler systems:

1. Smoke control systems are not needed because fire sprinklers limit fire growth, minimize fire size and limit smoke production to negligible levels.
2. Automatic sprinkler protection actually compliment smoke control systems producing a beneficial effect by reducing air flow rates and pressure differentials needed to achieve effective smoke control.
3. Sprinklers actually worsen smoke conditions (especially in shielded fires) by increasing the amount of smoke produced, causing it to descend to floor level where it reduces visibility.

In reality, all three philosophies contain a measure of validity based on both field experience and computer modeling. Therefore, one opinion cannot be entirely discounted in favor of another. Most experts on high-rise design do agree that no one feature is the panacea to the fire and smoke protection dilemma. History has taught us that a combination of education, automatic sprinklers, provisions to control smoke migration, early detection, and compartmentation provide better protection than any design philosophy that relies on a single system or feature.

The validity of this proposal to require smoke control in high-rise buildings is based on the known science and field experience regarding how smoke is generated in sprinklered fires, how smoke follows the unique air currents that develop in a high-rise building, and most importantly, the height and areas allowances for a high-rise building that would be permitted by the International Building Code (IBC).

The Report on the Public Hearing explained the committee recommendation for disapproval of G51-02 and G52-02 by stating," that no statistics to support this requirement or research data was provided" that would justify the additional "design, construction and maintenance costs".

It is true that little research has been performed to study the effects of automatic sprinkler protection combined with smoke control systems in high-rises. Most of the work has been conducted on sprinklers alone in order to address questions about the interaction of the sprinkler spray and the fire itself by such groups such as Factory Mutual, Hong Kong Polytechnic, NIST, the National Fire Protection Research Foundation, and other research organizations and universities. All of these studies provide important information about the interaction of sprinklers and fire. But they do not immediately apply to the question about how that interaction affects the performance of a smoke control system in a building. Few, if any, high-rise buildings have been constructed to the unique requirements of the IBC that would yield such information, and modeling has not yet been published that incorporates the IBC requirements. Data, at present, is also limited on the performance of sprinklers systems in controlling fire growth and smoke generation from a shielded fire, even though the probability of a shielded fire is significant. It is, therefore, impossible to provide such specific data as it relates to the IBC requirements in support of the G 51 or G2 proposals.

However, there are over 100 years of significant historical record on the fire and smoke performance of high-rises, and an abundance of easily obtainable scientific information on smoke development and migration available through NIST, NFPA, universities and research organizations that would assist the model code members in making an intelligent projection about how a high-rise constructed to the IBC would perform in the future for protection of property, and most importantly, life safety. Presented here is an elementary and minuscule summary of some of that information that relates to this proposal.

History - In the first half of this century, high-rise buildings were not viewed as being major contributors to the smoke hazard problems. This can, in part, be attributed to the extensive compartmentation and limited use of flammable wall and ceiling materials in the building at that time. Since the mid-century,

however, changes in design, construction, and occupancy practices of buildings have resulted in increased fire loads, and decreased number of compartments in buildings. Fire compartment size has increased with the center core, open-floor concept common in modern buildings. To date, Table 503 in the International Building Code has the most generous heights and areas allowances permitted by any building code in US history without any substantiative justification.

Combustible furnishings, insulations, and interior finishes in modern buildings have increased the fire load. For example, it has been estimated that if the smoke from just one burning upholstered armchair with 9 pounds of polyurethane foam were uniformly distributed throughout an 1800 square foot apartment, an occupant's hand held at arms length would be obscured from his or her own face.

In North America, the fire community became aware of the modern fire problems unique to high-rises due to several disasters. Most notable were the 1970 One New York Plaza fire, the1973 Hyatt Regency O'Hare Hotel fire, the 1980 MGM Grand Hotel in Las Vegas, a 1981 fire in North York Ontario at the Inn on the Park Hotel, the 1983 First Canadian Place in Toronto, Ontario, and One Meridian Plaza, Philadelphia, Pennsylvania in and the First Interstate Bank in Los Angeles, California in the 1990's. Other disastrous high-rise fires in the 1970s in Seoul, South Korea, Bogotá, Columbia and Sao Paulo, Brazil drew international attention to the problem.

Smoke problems in high-rises were first addressed in the 1960s by the Institute for Research in Construction (IRC) of the National Research Council of Canada. Early research involved fire studies, evacuation studies, and field measurements of air handling movement in the multi-story buildings caused by stack action and building air-handling systems in 9 to 45 story office buildings.

In the United States, Dr. John Klote and other researchers from the National Institute of Standards and Technology (NIST) pioneered the research, along with Dr. G. D. Lougheed of the Building and National Fire Laboratory, members of ASHRAE's TC 5.6 Committee on Fire and Smoke Control, and also the National Fire Protection Association's Committee on Smoke Management Systems. Other sources of research on fire and smoke issues in high-rise buildings are the Building Research Institute in Japan, the Fire Research Station in Borehamwoods, U.K., and the Centre Scientifique et Technique du Batiment in France. In this respect, researchers and students of the fire sciences are well informed about the dynamics of smoke movement in high-rises. The studies and conclusions of irrefutable facts led to the inclusion of requirements for smoke control and other measures in various building codes and standards worldwide.

Research – Although volumes have been written on the subject of smoke generation, toxicity and migration, the three most notable field research documents on the subject of smoke control and sprinklers were developed by the 1) Seattle Fire Department in 1984 at the United Pacific Building fire test, 2) actual full-scale field tests conducted by Dr. John Klote at the Plaza Hotel in Washington DC in 1989, and 3) tests conducted by the National Research Council of Canada National Fire Laboratory (NFL), jointly funded by the American Society of Hearing, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE) and the National Research Council of Canada in 1991and 1992.

The Seattle study looked at pressures generated by sprinklered and unsprinklered fires, carbon monoxide generated by sprinklered, shielded fires, and the performance of three smoke control approaches – stairwell pressurization, elevator shaft pressurization and zoned smoke control. The Seattle study concluded that sprinklers were effective in reducing fire pressures and thereby improved the likelihood that smoke control systems designed to the current standards (for assumed non-sprinklered conditions) would prevent smoke spread. There was no suggestion that the design standards could be reduced for sprinklered fire conditions. For non-sprinklered fires, the results showed that design pressure differences much higher than required by the Seattle building authority were required to prevent smoke spread into stair shafts. Problems with loss of stair pressurization upon opening of doors, with subsequent contamination of the elevator shafts were noted. This study provided a useful starting point for further validating studies.

Dr. Klote studied non-sprinklered fires with smoke control and sprinklered fires without smoke control in a series of full-scale fire tests at the Plaza Hotel. He noted that the fire pressures were low in the sprinklered fires and would not likely pose a challenge for a smoke control system designed to meet current standards. He also noted that sprinklered fired that were not rapidly extinguished could produce significant smoke, and that smoke control would be useful.

The NRC/ASHRAE project was a two-phase study, the first phase being conducted in a 1-story room test, which was intended to provide basic information regarding the interaction of sprinklers and shielded fires. The results were used for the design and interpolation of the second phase of 6 full-scale fire tests on the 7th floor of the NFL 10-story experimental tower. A smoke control system was used that had been designed to NFPA 92A (1988). The fires were shielded from the sprinkler spray so that prolonged smoke production would occur. Both fast response and standard response sprinklers were used. These tests yielded a considerable amount of useful information. The test reports are hundreds of pages in length, but here are some of the key summary points:

Occurrence of Shielded Fires: A sprinkler system designed according to NFPA 13 will almost always extinguish a fire, provided that the conditions at the time of the fire are reasonably close to the conditions in the design. A number of situations can occur where conditions of use of a building can compromise the performance of the sprinkler system. One such situation is where the fuel arrangement is shielded directly from the direct sprinkler spray. Even a "controlled" fire, as defined by NFPA 13, may continue to pose a threat to life safety. If not well ventilated, the smoke will contain dangerously high levels of carbon monoxide. Because the windows may not break due to the cooling effect of the sprinklers, the fuel itself may be densely packed so that it cannot burn in a freely ventilated manner. Therefore, shielded fires should be anticipated because they have a high probability of occurrence.

Smoke production and toxicity: The tests showed that shielded, sprinklered fires produce large volumes of toxic smoke, which will spread through a tall building if no measures are taken to stop it. In a later report, shielded fires with only two operating sprinklers, the heat release rate, radiant flux, room temperature and buoyancy pressure were substantially reduced in a compartment. However, even though the total smoke production was reduced by the sprinklers (and was notably less than in a non-sprinklered fire), there were significant quantities of "cold" smoke produced, and that this smoke contained potentially harmful concentration of carbon monoxide.

The NRC/ASHRAE report made a number of recommendations as to how smoke control systems are to be designed, including stairwell pressurization, and subjects for future studies.

Science- Smoke flow is a complex process resulting most often in upward movement. However, the movement of smoke through a building follows the same flow patterns and currents as the air inside the building which can result in horizontal and even downward flow. The two natural forces responsible for air movement patterns in a high-rise building are 1) wind action and 2) stack action. The two mechanical systems that also cause air movement are 3) the piston effect of elevator cars and 4) the HVAC system. In addition to these forces, other factors during a fire can also contribute to smoke movement, such as, buoyancy of combustion gases, expansion of gases and forced ventilation.

Wind exerts pressures on buildings that impose structural load of particular concern for high-rise buildings. The pressure from wind can also lead to air leakage and air movement within a building, which is major consideration in heating, cooling and in the movement of smoke. Although useful for natural ventilation, wind pressures can adversely affect air-handling equipment such as fan inlets and outlets during normal operations or especially during a fire event. Something as simple as a window opened or broken on the windward side of a building can force smoke to other locations in a building.

Stack action is an upward flow of air caused by the difference between the indoor and outdoor air temperature. It causes air to flow into a building from outdoors at low levels, upward through openings in the floors and vertical shafts, and out upper levels. This phenomenon usually occurs in colder climates during winter. However, reverse stack effect can also take place when the temperature on the inside of the building is colder than the outside temperatures due to air conditioning, commonly occurring in hotter climates.

Although fire resistive compartments are designed and constructed to prevent the spread of fire, they are not airtight. Such compartments can contain numerous cracks and openings around doors, windows, unprotected or improperly protected pipes, undampered ducts, as well as other floor openings such as shafts, stairwells, etc. According to Dr. George Tamura in his book, "Smoke Movement and Control in High-Rise Buildings", even in one and two story buildings, the stack effect in winter is sufficient to affect certain aspects of air leakage significantly. In very tall buildings, the stack effect can lead to pressure differences as great as 250 Pa (I inch of water) across exterior walls.

When an elevator car is in motion, suction pressure is created behind the moving car by piston action inside the shaft. As the car moves past the fire floor, this suction pressure can induce smoke form the fire region to enter the elevator shaft unless measures are taken to prevent it.

Heating, ventilating, and air conditioning (HVAC) systems are necessary to condition and distribute air through a network of ducts that interconnect many compartments one to another that would otherwise not be connected. In the event of a fire, the HVAC system can inadvertently serve to move the smoke far beyond the area of origin, contaminating areas of a building that are not involved with the fire. Presently, the IBC contains provisions for automatic fan shutdown upon detection of smoke, fire and smoke dampers are required in fire-resistance rated shaft enclosures, and fire dampers are only required in two hour-rated fire barriers (and one-hour where the property is not protected with automatic sprinklers). By some undefined standard, that may be satisfactory smoke protection for lower buildings where people can more easily evacuate from a building if the need arises. Air and smoke flow network models studies indicate that, with the air handling systems shut down, even relatively "leaky" dampers are of great benefit in reducing vertical smoke movement. However, HVAC systems can be designed to change modes of operation to achieve smoke control in specific zones of a building during fire situations, and this is the more appropriate, engineered smoke protection for high-rise buildings, which is the type of engineered smoke control system proposed in G51 and G52.

All these factors can combine to exert various pressures on the interior floors and walls and the exterior walls. Open floor plans tend to have the greater pressures throughout entire floor to next floor above due to stack effect. Under normal conditions compartmented floors tend to have different pressures in each compartment, with such pressures being separated by interior barriers. In a fire situation, the pressures can be greatly increased, particularly in the fire compartment. The large compartments permitted in the IBC with fewer separation walls than ever before have caused concern among some in the engineering community that the current successful fire record of life safety in high-rise offices cannot be maintained even with automatic sprinklers. Tests have indicated that the smoke hazard in an office building or other building uses with open floor plans in a high-rises are potentially the most hazardous for smoke migration due to pressures and air flow patterns, particularly in the upper floors. Apartment buildings or hotels with more compartmentation are more inherently resistant to smoke movement. However, the number of fatalities in high-rise apartments indicates that smoke can spread even in compartmented buildings to endanger the lives of people remaining in their rooms, or attempting to escape in corridors and stairwells. Therefore, similar attention to smoke control must be applied to residential occupancies.

Egress and Fire Fighting-There are two basic procedures in evacuating a multi-story building: Uncontrolled total evacuation, and controlled selective evacuation, the second usually being controlled by building management. Anticipating the duration and method of the evacuation is important since it has an important implication on the smoke control system. Possible congestion at a stairwell entrance, causing queuing up at the stairs can leave the doors open for prolonged period of time leaving the stairwells untenable. Additionally, fire fighters must use the stairwells to ascend to the fire area. Fire fighting, search and rescue operations, together with evacuation of occupants involve the stairwells and elevator doors, which can create multiple openings in the walls of the fire area.

In light of all these well-established facts, the 2003 International Building Code does not have a high-rise requirement for engineered smoke control system. Why not? It cannot be because history and science do not support it. Interestingly, the three model code building groups voted overwhelmingly to disapprove three proposals in 2000 code development cycle from the Oregon Building Officials Association that would have eliminated the current requirement for smoke control systems in atria, underground buildings, and covered malls. (See G50-00, G64-00 and G65-00). The proposal seemed to be prepared by the proponent as a sort of "trial balloon" submitted in response to a conspicuous absence of a similar high-rise provision as surmised from the supporting statements. It is obvious from this resounding "disapproval" vote that the voting members recognized the value of engineered smoke control systems in sprinklered construction.

SUMMARY: High-rise buildings constructed to the requirements of International Building Code, but without any specific measures to control smoke migration, are all the more vulnerable to property damage and occupants' loss of life. In reality, all the available research indicates that the need for smoke control is more pressing in tall buildings that in any other type of construction.

The following sources were used for reference in the preparation of this proposal:

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Design of Smoke Management Systems, ASHRAE and Society of Fire Protection Engineers, 1992.

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Compartmentation and Dampers are Essential for Life Safety, Southern Building, Southern Building Code Congress, Inc. Birmingham, AL, March/April 1999

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Lougheed, G. D.; Carpenter, D. W.; Ouellette, M. J.
Full-Scale Fire Tests for Sprinklered Offices in a High Rise Building.
International Conference on Fire Research and Engineering (ICFRE2), Second (2nd). Proceedings. August 3-8, 1997, Gaithersburg, MD, 1998.

Morgan, H. P.; Hansell, G.
Fire Sizes and Sprinkler Effectiveness in Office: Implications for Smoke Control Design.
Fire Safety Journal, Vol. 8, No. 3, March 1985

Mulholland, G.W
Smoke Production Properties, SFPE Handbook of Fire Protection Engineering, NFPA, Quincy, MA 1995

Narayanan, P.
Smoke Safety in Atrium Buildings.
Build, 16-19, December 1991/January 1992.

National Research Council of Canada and ASHRAE Report
Experiments Involving Shielded, Sprinklered Fires in a Building Equipped with Zoned Smoke Control System, ASHRAE Report RP-6470, March 1991

National Research Council of Canada and ASHRAE Report
Probability of Occurrence and Expected Size of Shielded Fires in Sprinklered Buildings, ASHRAE Report RP-838, anuary, 1997

Seattle Fire Department
United Pacific Building Fire and Smoke Control Tests, December 1-2, 1984, Vol. 2, Seattle (WA) Fire Department 1984.

Tamura, G. T.
"Computer Analysis of Smoke Control with Building Air Handing Systems", ASHRAE Journal, Vol. 14, No. 8, August, 1972

Tamura, G. T.
Smoke Movement and Control in High-Rise Buildings, NFPA SCHR-94, Fire Protection Assoc., Quincy, MA, 1994.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: This additional provision lacks substantive technical support. Smoke control systems would not provide an effective protection against spread of smoke if a sprinkler system failed. Therefore, this additional equipment would provide little additional protection.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Vickie Lovell. Intercode, Inc., representing Air Movement and Control Association, requests Approval as Submitted.

Commenter's Reason: A means to manage smoke must be required for high-rise buildings. Smoke control is already required in the IBC in underground buildings, atriums, and covered mall buildings. Smoke control systems have been required in nearly two thirds of the country for over a decade.

During the final hearings for the 2002 and 2003 IBC, the majority of the voting membership voted to support engineered smoke control in high-rise buildings, narrowly missing the two thirds majority required to overturn the committee's recommendation for disapproval two years in a row. Clearly, many building officials recognize the obvious problem with tall buildings and the challenge of controlling smoke, even when automatic sprinkler systems are present.

This century's fire record has demonstrated that serious fires can occur in modern high-rise buildings, that these fires can generate tremendous quantities of smoke, and that smoke can spread rapidly to areas remote from the fire. Many of the catastrophic high-rise fire deaths during that time period were linked to deadly smoke migration where either sprinklers were not present, or were present but failed to operate satisfactorily.

One can only speculate what the consequences of unsatisfactory sprinkler performance would be in a new high-rise where all the IBC allowable trade-offs for fire and smoke compartmentation features (more numerous than in any other previous model code) are permitted.

The validity of this proposal to require smoke control in high-rise buildings is based on the known science and field experience regarding how smoke is generated in sprinklered buildings, and how fire and smoke follow the unique air currents that develop in a high-rise building.

Few high-rise buildings have been constructed to the unique requirements of the IBC. It will take decades into the future to gather enough field data to identify a trend and then to study and evaluate the data. In the interim, there is an abundance of easily obtainable scientific information on smoke development and migration, shielded fires, and smoke control systems currently through NIST, NFPA, universities and research organizations that would assist the voting members in making an intelligent projection about how a high-rise constructed to the IBC would perform.

G80-03/04
410.3.4

Proposed Change as Submitted:

Proponent: Gregory J. Cahanin, Cahanin Fire Code Consulting; representing Thermotex Industries

Revise as follows:

410.3.4 Proscenium wall. ~~Where the stage height is greater than 50 feet (15 240 mm),~~ Where a legitimate stage contains an available fly gallery that exceeds 20 feet (6096 mm) all portions of the stage shall be completely separated from the seating area by a proscenium wall with not less than a 2-hour fire-resistance rating extending continuously from the foundation to the roof.

Exceptions:

1. A stage containing no combustible hangings other than a single main curtain, borders, legs and a single backdrop.
2. Arena stages and theater-in-the-round stages.

Reason: The 50 foot limit for requiring a fire resistance rated proscenium wall was arbitrarily derived. A stage where significant combustibles can be stored is where the threshold for a stage needing barrier protection between the stage and the audience. The added language better defines a stage as applied to the design and construction requirements of the building code where permanently affixed equipment includes a fly gallery and gridiron of sufficient size to handle a substantial fuel load in the form of hanging scenery in addition to lighting and other effects. When the fly space above the proscenium opening is less than 20 feet, the ability of owners to store scenery above the stage is limited. Proscenium openings are typically in the 18-22 foot height range. This proposal would therefore lower the arbitrary 50-foot threshold to approximately 40 feet. This new requirement is not arbitrary since the height above the proscenium is a key to how much and what can be stored there.

Notably this proposal contains two significant exceptions to the fire-rated proscenium wall requirement. First, small stages in high schools and colleges having a single main curtain, borders, legs, and a single backdrop are exempted.

Second, the other major categories of stages- area and theater-in-the-round are exempted from having a proscenium wall since the geometry of these stages does not logically allow for such protection. Such stages, because the audience is seated around the stage, have limited scenery. Opposition to changes in the last IBC cycle pointed to the general definition as having application to all types of stages and creating confusion- this proposal ends the confusion.

Performing stages set up in large arena's or convention centers would not come under these provisions when they are not permanent (kept up for more than 30 days).

The existing 50-foot stage height qualifier for proscenium walls should be removed for several substantial reasons:

1. In the mid to late 90's, the model codes moved to redefine stages based solely upon stage height based upon a BCMC report. The 1992 BCMC public hearings report in establishing a facilities concept is fraught with terms, which are not definitive such as " is expected" and "does not readily permit" in attempts to define the full working stage and a regular stage.

   Confusingly, the effective sprinkler performance at heights greater than 50 feet does not carry over to stages under 50 feet in the BCMC report. The report states, "The height may reduce the effectiveness of suppression systems and the multiple settings hung over the stage may further obstruct the suppression systems and impede access to a fire originating high above the stage." Stages to 50 feet in height can have similar fuel loads from hanging scenery and many stages are now being constructed to 49 feet to avoid the proscenium requirement while being able to store significant quantities of flying scenery above newly constructed stages.

   BCMC correctly notes that "using a water curtain in lieu of a fire curtain places reliance on the smoke control or roof vents to control smoke movement." Logic dictates that if flying scenery could reduce the effectiveness of suppression systems that are heat actuated, roof vents would be similarly impacted. It is well established that heat transfer in a fire is via convection and radiation. Water curtains do not block radiation from a fire and make up 30 to 40% of the heat energy of a fire. Solely relying upon water based protection measures on a legitimate stage would therefore not be consistent with use and occupancy mandates in Chapter 4 of the the building code.

2. Data provided by the NFPA Fire Analysis & Research Division as a part of the BCMC action was updated in July 2001 that provides some definitive insight into fires in theatres over a 19-year period. Annualized data of the report indicates there was one structural fire every four days in legitimate theaters with fixed seats. Approximately 8% of those fires were occurring in the performance or stage areas.

The height of the proscenium or valence opening in relation to the ceiling height is a critical factor in requirement for a rated proscenium wall between the stage and the audience. Moderate fuel loads of as little as 12.5 lb/ $ft.^2$ (taken from the NFPA Fire Protection Handbook) require separation of the stage for both people and property protection.

Cost Impact: Will increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: The threshold based upon an "available fly gallery" could allow code users to utilize a large space for storage of combustible without an available fly gallery. Standard practices notwithstanding, the code cannot be written to rely upon what industry usually does.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gregory J. Cahanin, Cahanin Fire & Code Consulting, representing Thermotex Industries, requests Approval as Submitted.

Commenter's Reason: The 50-foot limit for requiring a fire resistance rated proscenium wall was arbitrarily derived. A stage where significant combustibles can be stored is where the threshold for a stage needing barrier protection between the stage and the audience. The added language better defines a stage as applied to the design and construction requirements of the building code where permanently affixed equipment includes a fly gallery and gridiron of sufficient size to handle a substantial fuel load in the form of hanging scenery in addition to lighting and other effects. When the fly space above the proscenium opening is less than 20 feet, the ability of owners to store scenery above the stage is limited. Proscenium openings are typically in the 18-22 foot height range. This proposal would therefore lower the arbitrary 50-foot threshold to approximately 40 feet. This new requirement is not arbitrary since the height above the proscenium is a key to how much and what can be stored there. Notably this proposal contains two significant exceptions to the fire-rated proscenium wall requirement. First, small stages in high schools and colleges having a single main curtain, borders, legs, and a single backdrop are exempted. Second, the other major categories of stages- area and theater-in-the-round are exempted from having a proscenium wall since the geometry of these stages does not logically allow for such protection. Such stages, because the audience is seated around the stage, have limited scenery. Opposition to changes in the last IBC cycle pointed to the general definition as having application to all types of stages and creating confusion- this proposal ends the confusion. Performing stages set up in large arenas or convention centers would not come under these provisions when they are not permanent (kept up for more than 30 days).

G84-03/04
410.3.5.3

Proposed Change as Submitted:

Proponent: Gregory J. Cahanin, Cahanin Fire Code Consulting; representing Thermotex Industries

Add new text as follows:

410.3.5.3 Fire curtains shall be made of one or more thicknesses of a noncombustible fabric or a fabric with a noncombustible base material, which shall be permitted to be given a coating provided the modified fabric has a minimum weight of 2 3/8 lb./yd 2 (1.3 kg/m 2). Fire curtain fabric shall have minimum tensile strength requirements of 400 lbf/in. (70 N/mm) in both the warp and fill directions. Fire curtain fabric shall be reinforced with non-corrosive wire intertwined with the base fiber at a minimum rate of one wire per yarn. Wire shall not be required and fabric weight shall be permitted to be less than 2 3/8 lb./yd 2 (1.3 kg/m 2) if it can be substantiated by approved tests that it is equivalent in strength and durability.

(Renumber remaining sections)

Reason: This paragraph is inserted to better define the fire curtain requirements since no national standard now exists for the installation of fire curtains. UBC fire curtain standards were not picked up in any of the new ICC codes. There are currently two organizations developing a fire curtain test and installation standard-NFPA and ESTA that will result in a ready reference for the building code in future cycles.

These technical requirements for the construction of the fire curtain are necessary to insure that curtains that are constructed will perform as expected.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: Specification requirements for materials are more appropriately dealt with in a standard, after due consideration by an appropriate standards promulgator.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gregory J. Cahanin, Cahanin Fire & Code Consulting, representing Thermotex Industries, requests Approval as Submitted.

Commenter's Reason: This paragraph is inserted to better define the fire curtain requirements since no national standard now exists for the installation of fire curtains. UBC fire curtain standards were not picked up in any of the new ICC codes. There are currently two organizations developing a fire curtain test and installation standard-NFPA and ESTA that will result in a ready reference for the building code in future cycles. NFPA 101 now uses similar language to define the construction requirements for the curtain fabric. Should this requirement not be approved fabric for fire curtains could be installed that lacks the tensile strength and durability over time that curtains installed under the old UBC standard now meet. The approval of this new section will not result in any proprietary advantage by any manufacturer.

G85-03/04
410.3.6; [F] 801.1.2

Proposed Change as Submitted:

Proponent: : Marcelo M. Hirschler, GBH International; representing Fire Retardant Chemicals Association

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

1. (IBC) Revise as follows:

SECTION 202
DEFINITIONS

~~**FLAME RESISTANCE.** See Section 802.1.~~

410.3.6 Scenery. Combustible materials used in sets and scenery shall ~~be rendered flame resistant~~ meet the fire propagation performance criteria of NFPA 701, in accordance with Section 805 and the International Fire Code. Foam plastics and materials containing foam plastics shall comply with Section 2603 and the International Fire Code.

SECTION 802
DEFINITIONS

~~**FLAME RESISTANCE.** That property of materials or combinations of component materials that restricts the spread of flame in accordance with NFPA 701.~~

3102.3 Type of construction. Noncombustible membrane structures shall be classified as Type IIB construction. Noncombustible frame or cable-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction. Heavy timber frame-supported structures covered by an approved membrane in accordance with Section 3102.3.1 shall be classified as Type IV construction. Other membrane structures shall be classified as Type V construction.

> **Exception:** Plastic less than 30 feet (9144 mm) above any floor used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers, is not required to meet the fire propagation performance criteria of NFPA 701. ~~be flame resistant~~.

3102.3.1 Membrane and interior liner material. Membranes and interior liners shall be either noncombustible as set forth in Section 703.4, or meet the fire propagation performance criteria of ~~flame resistant as determined in accordance with~~ NFPA 701 and the manufacturer's test protocol.

> **Exception:** Plastic less than 20 mil (500 mm) in thickness used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers, is not required to ~~be flame resistant~~ meet the fire propagation performance criteria of NFPA 701.

3102.6.1.1 Membrane. ~~Flame-resistant membrane.~~ A ~~flame-resistant~~ membrane meeting the fire propagation performance criteria of NFPA 701 shall be permitted to be used as the roof or as a skylight on buildings of Type IIB, III, IV and V construction provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery.

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

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

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

   Exception: Any textile covering for the canopy shall meet the fire propagation performance criteria of ~~be flame resistant as determined by tests conducted in accordance with~~ NFPA 701 after both accelerated water leaching and accelerating weathering.

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

2. Revise as follows:

[F] 801.1.2 Decorative materials and trim. Decorative materials and trim shall be restricted by combustibility and the fire propagation performance criteria of NFPA 701, ~~flame resistance~~ in accordance with Section 805.

Reason: NFPA 701 used to be called "Methods of Fire Test for Flame-resistant Textiles and Films", but is now called "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films". If a material passes NFPA 701 it is not considered "flame resistant" but is considered to have met the "fire propagation performance criteria of NFPA 701". It is therefore best not to call materials that meet that test "flame resistant" materials, but to explain the criteria the materials meet. Moreover, this avoids confusion between a material with low "fire propagation performance" based on a small scale ignition flame (as in NFPA 701) with "fire resistance", a property associated with the ASTM E 119 time-temperature curve.

This proposal is part of a set of proposals to replace all references in the ICC to "flame resistant" or "flame resistance" when related to NFPA 701 and refer instead to the "fire propagation performance criteria of NFPA 701". The references are all in the building code (IBC) and in the fire code (IFC).

Cost Impact: None

Item 1 (IBC)
Committee Action: **Approved as Submitted**

Committee Reason: Based on proponent's published reason.

Assembly Action: **None**

Item 2 (IFC)
Committee Action: Approved as Submitted

Committee Reason: For consistency with the action taken on code change F43-03/04 and the proponent's published reason statement.

Assembly Action: None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted .

Marcelo M. Hirschler, GBH International, representing Fire Retardant Chemicals Association, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

ITEM 1:

410.3.6 Scenery. Combustible materials used in sets and scenery shall meet the ~~fire~~ flame propagation perfomance criteria of NFPA 701, in accordance with 805 and the International Fire Code. Foam plastics and materials containing foam plastics shall comply with 2603 and the *International Fire Code*.

3102.3 Type of construction. Noncombustible membrane structures shall be classified as Type IIB construction. Noncombustible frame or cable- supported structures covered by an approved membrane in accordance with 3102.3.1 shall be classified as Type IIB construction. Heavy timber frame-supported structures covered by an approved membrane in accordance with 3102.3.1 shall be classified as Type IV construction. Other membrane structures shall be classified as Type V Construction.

> **Exception:** Plastic less than 30 feet (9144 mm) above any floor used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers, is not required to meet the ~~fire~~ flame propagation perfomance criteria of NFPA 701.

3102.3.1 Membrane and interior liner material. Membranes and interior liners shall be either noncombustible as set forth in 703.4, or meet the ~~fire~~ flame propagation perfomance criteria of NFPA 701 and the manufacturer's test protocol.

> **Exception:** Plastic less than 20 mil (500 mm) in thickness used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers, is not required to meet the ~~fire~~ flame propagation perfomance criteria of NFPA 701.

3102.6.1.1 Membrane. A meeting the ~~fire~~ flame propagation performance criteria of NFPA 701 shall be permitted to be used as the roof or as a skylight on buildings of Types IIB, III, IV and V construction provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery.

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

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

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

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

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

ITEM 2:

801.1.2 [F] Decorative materials and trim. Decorative materials and trim shall be restricted by combustibility and the ~~fire~~ flame propagation perfomance criteria of NFPA 701, in accordance with 805.

Commenter's Reason: I made a mistake when I submitted the proposal. The actual wording in NFPA 701 is "flame propagation performance" and not "fire propagation performance".

The committee approved the language I submitted, but I made a small mistake. This action needs to be consistent with the action on F43.

NFPA 701 used to be called "Methods of Fire Test for Flame-resistant Textiles and Films", but is now called "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films". If a material passes NFPA 701 it is not considered "flame resistant" but is condidered to have met the "flame propagation perfomance criteria of NFPA 701". It is therefore best not to call materials that meet that test "flame resistant" materials, but to explain the criteria the materials meet. Moreover, this avoids confusion between a material with low "flame propagation performance" based on a small scale ignition flame (as in NFPA 701) with "fire resistance", a property associated with the ASTM E 119 time-temperature curve.

G93-03/04
412.5.6

Proposed Change as Submitted:

Proponent: Daniel A. Roth, P.E.; representing Robinson Helicopter Company

Revise as follows:

412.5.6 Rooftop heliports and helistops. Rooftop heliports and helistops shall comply with NFPA 418.

> **Exception:** Private helistops consisting only of landing areas up to 30 feet in length and width and exit facilities need not comply with NFPA 418.

Reason: The requirements of NFPA 418 are excessive when applied to small private helistops. Helistops with landing areas up to 30 feet in length and width are physically limited to the accommodation of a single small helicopter at a time due to operating area requirements and have occupant loads of less than 10. Private helistops are not accessible to the general public.

Cost Impact: None

Committee Action: Disapproved

Committee Reason: A helicopter is dangerous regardless of where it lands. Private helistops need the same safety provisions as public helistops.

Assembly Action: None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Daniel A. Roth, P.E., Robinson Helicopter Company, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

412.5.6 Rooftop heliports ~~and helistops~~. Rooftop heliports ~~and helistops~~ shall comply with NFPA 418.

~~**Exception:** Private helistops consisting only of landing areas up to 30 feet in length and width and exit facilities need not comply with NFPA 418.~~

Commenter's Reason: Section 412.5.6 mistakenly requires helistops to comply with NFPA 418. This mistake occurred when section 1511.3 of the BOCA code, that requires heliports (not heliports and helistops) to comply with NFPA 418, was pulled and adopted into the 2000 IBC.

From section 1.1.1 of NFPA 418 Standard for Heliports "This standard specifies the minimum requirements for fire protection for heliports and rooftop hangars. This standard does not apply to ground level helicopter hangars. All hangars not covered by this standard shall comply with NFPA 409, Standard on Aircraft Hangars.", the scope of NFPA 418 is heliports and rooftop helicopter hangars not helistops.

It should be noted that helistop and heliport fire and life safety issues are addressed in section 1107 of the IFC.

See section 412.5.2 for definitions of heliports and helistops.

G103-03/04
504.2

Proposed Change as Submitted:

Proponent: John Valiulis, President, Alliance for Fire and Smoke Containment and Control (AFSCC)

Revise as follows:

504.2 Automatic sprinkler system increase. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story. These increases ~~are~~ shall not be permitted in addition to the area increase in accordance with Sections 506.2 and 506.3. For Group R buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story, but shall not exceed four stories or 60 feet (18 288 mm), respectively.

Exceptions:

1. Group I-2 of Type IIB, III, IV or V construction.
2. Group H-1, H-2, H-3 or H-5.
3. Fire-resistance rating substitution in accordance with Table 601, Note d.

506.3 Automatic sprinkler system increase. Where a building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the area limitation in Table 503 is permitted to be increased by an additional 200 percent (Is = 200 percent) for multistory buildings and an additional 300 percent (Is = 300 percent) for single-story buildings. These increases ~~are~~ shall not be permitted in addition to the height and story increases in accordance with Section 504.2.

Exceptions:

1. Buildings with an occupancy in Group H-1, H-2 or H-3.
2. Fire-resistance rating substitution in accordance with Table 601, Note d.

Reason: The purpose of this proposed code change is to eliminate the "double dipping" that is presently allowed in the International Building Code (IBC) where automatic sprinkler systems are provided in buildings. This "double dipping" is a result of allowing both area increases and height increases for the allowable heights and areas for buildings contained in Table 503. Such a practice results in excessive building volume for the minimum type of construction required which, in effect, increases the total fire load of a building, as well as its occupant load, while relying on the automatic sprinkler system to compensate for the significant increase in building size.

We believe that "double dipping" overly relies on the use of automatic sprinkler systems in lieu of providing minimum built-in fire resistant protection for buildings.

Allowing automatic sprinkler system increases for both height and area results in a lessened use of fire resistant and noncombustible construction. This condition also has a negative impact on fire fighter safety when fires occur in these buildings. Fire fighters will be faced with having to enter much larger buildings with less fire resistance, so their exposure to structural collapse becomes more probable. Both sprinklers and fire resistant construction play an important role in the overall level of fire and life safety provided in buildings. Therefore, there should not be an excessive reliance on one or the other at the expense of the other which will result in a lessening of the overall level of fire and life safety provided by the code.

Cost Impact: Will increase the cost of construction.

Committee Action: **Disapproved**

Committee Reason: The increases for height and area together have long been in use in the previous legacy codes. This is not "double dipping". The entire philosophy for height and areas is based upon these tradeoffs. There is no reason to challenge this philosophy. The NFPA report cited regarding the reliability of sprinkler systems is still an open case that does not definitively mean that ICC should start to question existing provisions regarding trade-offs.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Rick Thornberry, The Code Consortium, Inc., representing Alliance for Fire and Smoke Containment and Control, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

504.2 Automatic sprinkler system increase. Where a building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story. These increases shall not be permitted in addition to the area increase in accordance with Section~~s 506.2 and~~ 506.3. For Group R buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2, the value specified in Table 503 for maximum height is increased by 20 feet (6096 mm) and the maximum number of stories is increased by one story, but shall not exceed four stories or 60 feet (18 288 mm), respectively.

(Portions of code change not shown remain as proposed)

Commenter's Reason: The Alliance for Fire and Smoke Containment and Control (AFSCC) strongly supports the concept of balanced design in building construction. This means that there should not be an over reliance on any single fire protection strategy or method used to provide the code required minimum level of fire and life safety. That is the reason we submitted this code change proposal. We believe the International Building Code (IBC) relies too heavily on automatic sprinkler systems to allow increases in the building allowable area and allowable height for a given type of construction based upon the occupancy classification of the building. We are even more concerned that the IBC generally allows significantly greater areas and heights than any of the predecessor legacy codes. Not only are the base floor areas and building heights greater, but also the total allowable building areas and heights when the allowable area and height increases for both frontage and automatic sprinkler system protection are taken advantage of. This is especially true for the higher types of construction, i.e. Types I, II, and III.

This code change proposal takes a simplistic approach to addressing this concern by simply not allowing both an area increase and a height increase to be taken at the same time for any given building where it is protected throughout with an automatic sprinkler system. This "double dipping" presently allowed by the IBC has a significant impact on buildings up to three stories in height and a lesser impact on taller buildings because of the maximum 3 x area limitation specified in Section 506.4.

We are concerned that under the IBC buildings are allowed to get bigger or, in other words, are allowed to have their required fire resistance and noncombustibility reduced with the installation of an automatic sprinkler system. We believe that consideration should be given to the fact that a recent NFPA study of sprinkler system performance over an 10 year period has shown that sprinkler systems fail to operate in approximately 1 out of every 6 fires in sprinklered buildings where it was judged that the sprinkler system should have operated. We believe that such a failure rate does not justify using automatic sprinkler systems to achieve both an area increase and a height increase which results in a larger volume building than would otherwise be the case if only one or the other increase were allowed. This is exactly what this code change proposal does. The proposed modification to delete the reference to Section 504.2 reflects the original intent of the proponent.

To give an example of how the IBC provides much greater building areas and heights than the legacy codes, we have developed a comparison of a Group B office building of Type IIB construction with the IBC allowable heights and areas to the allowable heights and areas of the 1999 BOCA National Building Code, 1997 ICBO Uniform Building Code, and 1999 SBCCI Standard Building Code.

Example: Group B Office Building
Type IIB Construction

	ICC IBC		BOCA NBC		ICBO UBC		SBCCI SBC	
	Area	Height	Area	Height	Area	Height	Area	Height
Base	23,000 s.f.	4 st. 55'	14,400 s.f.	3 st. 40'	12,000 s.f.	2 st. 55'	17,000 s.f.	2 st. 55'
Max.	86,250 s.f.	5 st. 75'	47,520 s.f.	4 st. 60'	48,000 s.f.	2 st. 55'	51,000 s.f.	5 st. 55'
						or		
	As Revised				24,000 s.f.	3 st. 55'		
Max.	86,250 s.f.	4 st. 55'						
	or							
Max.	40,250 s.f.	5 st. 75'						
Total	69,000 s.f.	4 st. 55'	43,200 s.f.	3 st. 40'	24,000 s.f.	2 st. 55'	34,000 s.f.	2 st. 55'
Max.	258,750 s.f.	5 st. 75'	190,080 s.f.	4 st. 60'	96,000 s.f.	2 st. 55'	204,000 s.f.	4 st. 55'
						or		or
	As Revised				48,000 s.f.	3 st. 55'	255,000 s.f.	5 st. 55'
Max.	258,750 s.f.	4 st. 55'						
	or							
Max.	120,750 s.f	5 st. 75'						

In conclusion, we believe a good first step toward bringing the IBC allowable heights and areas back into more reasonable limits based on those contained in the three legacy codes would be for the ICC voting membership to approve this code change proposal as submitted. This will eliminate the "double dipping" presently allowed for automatic sprinkler system increases in the allowable area and heights of buildings.

G104-03/04
506

Paul Hayward, City of Farmington, Utah; representing Bonneville Chapter ICC

Delete current Equations 5-1 and 5-2 and substitute the following:

506.1 General, 506.2 Frontage increase.

For MULTI-STORY BUILDINGS

$A_a = S \times \{A_t + [A_t \times I_f] + [A_t \times 2]\}$ Equation 5-1-ms

Where,

$I_f = [F / P - 0.25] W / 30$ Equation 5-2-ms

S = 2 or 3, per Section 506.4

For SINGLE-STORY BUILDINGS

$A_a = A_t + [A_t \times I_f] + [A_t \times 3]$ Equation 5-1-ss

Where,

$I_f = [F / P - 0.25] W / 30$ Equation 5-2-ss

Reason: The concept of multiplying by either 200 or 300 and then dividing by 100 is the same as multiplying by either 2 or 3. The effort to multiply by 100 and then divide by 100 is redundant and serves no useful purpose. A better and more user-friendly approach is to print formulas for multi-story and single-story applications so that the factors permitted in Section 503.3 aren't inadvertently overlooked. Coupled with the proposal to change Section 506 to either doubling or tripling a basic area the code will be easier to understand. No technical changes will occur by simplifying the equations.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: Given that the code now allows a factor of 4 for four story residential buildings with 13R sprinklers, the use of the factor S being 2 or 3 could potentially confuse the code users.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Paul Hayward, Farmington City, Utah, representing Bonneville Chapter of ICC, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

Delete proposed Equations 5-1ms and 5-2ms and substitute the following:

Proposed Equations 5-1ss and 5-2ss would be unchanged.

For MULTI-STORY BUILDINGS

~~$A_a = S \times \{A_t + [A_t \times I_f] + [A_t \times 2]\}$ Equation 5-1 ms~~

~~Where,~~

~~$I_f = [F / P - 0.25] W / 30$ Equation 5-2 ms~~

~~S = 2 or 3, per Section 506.4~~

506.1 General, 506.2 Frontage increase.

For MULTI-STORY BUILDINGS

$Aa = \{At + [At \times If] + [At \times 2]\}$ Equation 5 – 1 ms

Where $If = [F / P - 0.25] W / 30$ Equation 5 – 2 ms

Commenter's Reason: The committee reason objecting to the misapplication of the factor "S" has been removed from the proposal. It now just simplifies the formulas and separates them into either single or multi-story applications. By simplifying the formulas one need not multiply by 300 and then divide by 100; they just multiply by 3. The "S" factor is to be considered separately, just as it is currently. This now makes sense.

G106-03/04
506.4.1

Proposed Change as Submitted:

Proponent: Gene Boecker, Code Consultants, Inc.

Revise as follows:

506.4 Area determination. (No change to current text)

506.4.1 Mixed Occupancies. In buildings of mixed occupancy, the allowable area per floor (Aa) shall be based on the most restrictive provisions for each occupancy when the mixed occupancies are treated according to 302.3.1. Where the occupancies are treated according to Section 302.3.2 as separated occupancies, the maximum floor area shall be the sum of the maximum area determined for each occupancy in accordance with 503.3, multiplied by the ratio of its area to the total area of the building.

Reason: The current language of section 503.3 does not discriminate between differing occupancies. Although it is possible to have mixed occupancies within one building, there is no indication of how to treat such a condition, whether to use the most restrictive occupancy for the whole building, to weigh the averages of each, or some other method. The added language borrows from the current text of 302.3.2 (separated uses) by allowing the maximum floor area to be based on the weighted averages when the separated use option is used. Since the intent with this provision is to limit the maximum potential hazard in a building based on occupancy, there should be some way to evaluate the risk fairly.

An example of how this would be used can be understood from analyzing a four-story building of Type IIB construction, wherein the top three floors are offices and the ground floor is a restaurant. Under 302.3.2 the top floors are acceptable because they are within the height limitation for a B occupancy and the ground floor is separated according to Table 302.3.2 for the A-3 occupancy. Under the present text, however, the maximum area limitation for the entire building could be based upon the more restrictive occupancy. Assuming no area or sprinkler increases, the maximum area could be limited to 28,500 S.F. (3 x 9,500) regardless of the fact that most of the building is a B occupancy. Under the proposed text, assuming the same area for each floor, the maximum area would be 38,625 S.F.[(¾) x 3 x 14,000 + (¼) x 3 x 9,500]; less than if the whole building were business (3 x 14,000 = 42,000 S.F.) but more than if the whole building is regulated by the assembly occupancy.

This method allows more flexibility in the design and more fairly equates the risk to the actual conditions.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: The proposed language could be confusing, by attempting to express mathematical provisions in text form. In addition, this is already provided for in other portions of the code and is therefore unnecessary here.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gene Boecker, Code Consultants, Inc., requests Approval as Modified by this Public Comment.

Modify proposal as follows:

506.4.1 Mixed Occupancies: In buildings of mixed occupancy, the allowable area per floor (A_a) shall be based on the most restrictive provisions for each occupancy when the mixed occupancies are treated according to 302.3.1. ~~Where~~ When the occupancies are treated according to section 302.3.2 as separated occupancies, the maximum total floor area for a building shall be such that the sum of the ~~maximum floor area determined for each occupancy in accordance with 503.3, multiplied by the ratio of its area to the total area of the building.~~ ratios for each such area on all floors as calculated according to section 302.3.2 shall not exceed 2 for two story buildings and 3 for buildings three stories or higher.

Commenter's Reason: The manner in which the maximum area is to be determined is not included within the code and needs to be included

for clarity. The proof of this is in the fact that a written interpretation has been issued by staff on this very subject (see page 40 of the July 2003, *Building Safety Journal*). Since this interpretation was not known to the public at the time that the original proposals were due (March 24, 2003), it is appropriate to include those ideas in this code change since it deals with that subject. The revised text above is taken from the interpretation response and addresses the issue by stating how each mixed-use condition is to be applied in determining the maximum area of a building according to 506.4. Additionally, text was added to clarify what happens to both 2 and 3 story conditions. Finally, the term "where" was changed to "when" for consistency within the section and conformity to standard code language.

G110-03/04
507.2

Proposed Change as Submitted:

Proponent: David S. Collins, FAIA; representing The American Institute of Architects

Revise as follows:

507.2 Sprinklered, one story. The area of a one-story, Group B, F, M or S building or a one-story Group A-4 building of other than Type V construction shall not be limited when all of the following are met:

1. The building is ~~provided~~ equipped throughout with an automatic sprinkler system ~~throughout~~ in accordance with Section 903.3.1.1, ~~and~~
2. The building is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width, and
3. Any areas of Group A-1, A-2, or A-3 occupancies in buildings of Type I, II, III or IV construction do not exceed 20% of the total building area.

Exceptions: (No change)

Reason: Much of the change is a clarification and format to clearly identify the requirement for the fire suppression. In addition, the International Building Code does not permit a restaurant or a bar in an unlimited area building. This is despite the fact that for years they have been allowed in strip shopping centers and other similar buildings with no experience to indicate that there is a reason to prevent their use in such facilities. Many existing facilities and many planned facilities have been required to go to appeal in order to gain approval for restaurants and bars in these buildings for no apparent reason. I have limited the type of construction to those that are typically used and which is already established for A-4, and the area of the other assembly occupancies to 20% to find a middle ground where the building can have areas where these occupancies will be permitted.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: The proposed 20% factor has no technical justification.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gregory Nicholls, City of Mason, Ohio, representing Ohio Building Officials Association, requests Approval as Modified by this Public Comment.

Modify item 3 of proposal as follows (remainder as proposed):

3. Any areas of Group A-1, A-2, or A-3 occupancies in buildings of Type I, II, III, or IV construction which ~~do not exceed 20% of the building area~~, do not exceed the allowable area for that occupancy, are located at the perimeter of the building, and have at least 50% of their exits directly to the exterior.

Commenter's Reason: It is not logical to eliminate all restaurants, theatres and other assembly occupancies from unlimited area buildings that are not malls. Section 402.4.3 allows assembly uses anywhere within malls, which can be 3 stories in height, of the four types of construction listed above, and is also unlimited in area. The mall section requires 50% of the exits directly to the exterior only when the occupant load of the assembly tenant exceeds 500. With this modification, the additional exits would be required when the occupant load reaches only 50. The amount of area for the assembly areas could not exceed the allowable area for the occupancy, so there isn't any increase in hazard to the building with this change. With the proposed language above, the assembly use is actually "tacked on" to the rest of the unlimited area building since it is at the perimeter. The 20% part was struck because it had no technical justification.

G113-03/04
507.2

Proposed Change as Submitted:

Proponent: Jim Jorgensen, City of Overland Park

Revise as follows:

507.2 Sprinklered, one story. The area of a one-story, Group B, F, M or S building or a one-story Group A-4 building of other than Type V construction shall not be limited when the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1, and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

Exceptions:
1. and 2. (No change to current text)
3. Group A-1, A-2, A-3 occupancies are permitted provided the assembly occupancy is separated from other spaces as required for separated uses in Section 302.3.2.

Reason: Group A-1, A-2, A-3 occupancies are excluded from unlimited area buildings. The committee action for G105-02 rejected the proposed change to include Group A on the grounds that they had concerns about bars, nightclubs and dance halls without additional safety provisions. The proponents for G105-02 reasoned that such uses are not limited in covered mall buildings and that single story strip shopping centers provide equivalent if not superior levels of safety. It can be argued that a strip shopping center is a covered mall with the mall on the exterior therefore A occupancies would be permitted. Several of the previous model code groups permitted restaurants and theaters in unlimited area buildings with not reported safety problems. Separating A Occupancies minimum 2-hr fire barriers per Section 303.3.2 for separated uses provides additional safety features to address the concerns of the committee.

Cost Impact: None

Committee Action: **Approved as Modified**

Modify proposal as follows:

507.2 Sprinklered, one story. The area of a one-story, Group B, F, M or S building, or a one-story Group A-4 building, of other than.....(remainder of proposed text as submitted).

(Remainder of submittal as proposed)

Committee Reason: Based on proponent's published reason.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment 1:

Jason J. Thompson, National Concrete Masonry Association, representing Masonry Alliance for Codes and Standards, requests Approval as Modified by this Public Comment.

Modify proposed exception 3 as follows:

3. Group A-1, A-2, A-3 occupancies are permitted provided the assembly occupancy is separated from other spaces as required for separated uses in Section 302.3.2 and the aggregate area of the assembly occupancies does not exceed 10 percent of the area of the building nor the tabular values in Table 503 for the allowable area of the assembly occupancies.

Commenter's Reason: Basically, this Code Change Proposal is a back door way of allowing unlimited area buildings for Group A occupancies other than that currently provided for Group A-4 occupancies of other than Type V construction under the present provisions of Section 507.2. Exception 3 only requires that the Group A occupancies be separated from other spaces in the unlimited area building as required for separated uses in Section 302.3.2. However, there are no area limits specified for the Group A occupancies allowed by the new Exception 3. Thus, the entire building could, in fact, contain Group A occupancies or could be one large Group A-1, A-2, or A-3 occupancy. It should be noted that none of the legacy model codes allowed unlimited area buildings for any Group A assembly occupancies except for the SBCCI Standard Building Code and the BOCA National Building Code which allowed Group A-3 (IBC A-4) occupancies in other than Type 5 (SBC Type VI and IBC Type V) construction which is exactly what is allowed by the current Section 507.2. It should also be noted that the BOCA National Building Code allowed motion picture theaters in unlimited area buildings which is currently allowed by Section 507.9. This is contrary to the reason supporting this Code Change Proposal which indicates that several of the previous model code groups permitted restaurants and theaters in unlimited area buildings.

Furthermore, the reason for the Code Change states that minimum 2 hour fire barriers would be required per Section 303.3.2 to separate the Group A occupancies from the other occupancies in the building. However, the 2 hour separation would only be provided if the other portions of the building are classified as Group F-1 or S-1 occupancies. This is because the exception to Section 302.3.2 allows a one hour reduction in the fire barrier separation ratings in Table 302.3.2 when an automatic sprinkler system is installed. Such would be the case for these unlimited area buildings. Thus, the fire separation required for the other occupancies allowed in such unlimited area buildings which would include Groups B, F-2, M, and S-2 occupancies would only be 1 hour.

Although we would prefer that the Code Change be disapproved for the above reasons, since no technical justification has been provided to substantiate a modification of this magnitude, we have offered this Public Comment as a potential compromise. The modifications proposed by this Public Comment will limit the aggregate allowable area of any assembly occupancies permitted in the unlimited area building to a maximum of 10% of the area of the building. There is also a provision that the aggregate area not exceed the tabular values in Table 503 for the allowable area for such assembly occupancies. This proposed language is consistent with the language in Section 302.2 for accessory use areas. If the ICC voting membership believes that some compromise is appropriate to allow Group A assembly occupancies in unlimited area buildings beyond that presently allowed by Sections 507.2 and 507.9, then we would strongly urge that this Public Comment be approved in order to modify the new Exception 3 to limit the total area of such Group A assembly occupancies.

It should also be noted that the discussion on this Code Change was very controversial during the hearings held in Nashville. It received a great deal of debate and the Committee vote was only 9 to 8 in favor of approval as modified. Therefore, we believe the membership should closely analyze the impacts of this Code Change Proposal before taking final action.

Public Comment 2:

Rick Thornberry, The Code Consortium, Inc., representing Alliance for Fire and Smoke Containment and Control, requests Disapproval.

Commenter's Reason: This proposed code change as approved by the Committee will allow virtually any type of assembly occupancy to be located in one story unlimited area buildings without limits. Such buildings can be of Type VB unprotected wood frame construction. All that is required is that the building be protected with an automatic sprinkler system throughout and that it be surrounded by streets or open yards at least 60 feet in width.

It is interesting to note that Table 503 limits Group A occupancies in Type VB construction to a basic area of 5,500 sq. ft. for Group A-1 and 6,000 sq. ft. for both Group A-2 and A-3 occupancies. Using the maximum allowable area increases for both automatic sprinkler protection and frontage open space around the entire perimeter of the building when at least 30 feet in width, the maximum allowable areas would be 26,125 sq. ft. and 28,500 sq. ft., respectively. Yet this code change will allow unlimited areas without any technical justification provided to substantiate such a drastic change in the code.

Certainly, there is no actual fire experience to speak of with such buildings since none of the legacy codes have allowed Group A occupancies in unlimited area buildings of Type VB construction. These buildings could include legitimate theaters, concert halls, night clubs, exhibition halls, dance halls, restaurants, and bars – all of which can have very high occupancy loads and even fairly high fire loads without any built-in fire resistive protection or any limits on the combustibility of the building construction.

It should be noted that in order to be of unlimited area per the present construction requirements of the International Building Code, the minimum type of construction required for a Group A occupancy would be Type IB. This type of construction basically requires 2 hour fire resistive noncombustible construction. We don't believe that increasing the frontage (open yards) from a width of 30 ft. to 60 ft. is a reasonable trade-off to allow the building construction type to be reduced from Type IB to Type VB. Therefore, we believe this code change should be disapproved.

G121-03/04
508.2

Proposed Change as Submitted:

Proponent: Thomas Gironda, Montgomery County Maryland; representing Department of Permitting Services

Revise as follows:

508.2 Group S-2 enclosed parking garage with Group A, B, M or R above. A basement and/or the first story above grade plane of a building shall be considered as a separate and distinct building for the purpose of

determining area limitations, continuity of fire walls, limitation of number of stories and type of construction, when all of the following conditions are met:

(No change to Items 1-3)

4. The building below the horizontal assembly is a Group S-2 enclosed parking garage, used for the parking and storage of private motor vehicles.

Exceptions:
1. Entry lobbies, mechanical rooms and similar uses incidental to the operation of the building shall be permitted.
2. Group A having ~~an assembly room with an occupant load of less than 300,~~ assembly rooms having an aggregate occupant load of less than 300 or Group B or M shall be permitted in addition to those uses incidental to the operation of the building (including storage areas), provided that the entire structure below the horizontal assembly is protected throughout by an approved automatic sprinkler system.

(No change to Item 5)

Reason: This text is needed to clarify the intent of code text.

Cost Impact: None

Committee Action: Approved as Submitted

Committee Reason: Based on proponent's published reason.

Assembly Action: None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Ed Schultz, Code Consultants, Inc., requests Disapproval.

Commenter's Reason: The proponent submitted this as needed to clarify the intent of the code indicating it was their impression that only a maximum of 300 occupants in either one or multiple assembly rooms is acceptable under the provisions of this code section. In fact, the code provisions intended that more than one assembly A room could exist as long as any single room did not exceed 300 occupants. This is evident by the fact that this provision came from the Uniform Building Code under the provisions of Section 311.2.2.1 of the 1997 edition. The wording read as follows: Group A, Division 3 and Group B office, drinking and dining establishments and Group M retail occupancies in addition to those uses incidental to the operation of the building (including storage areas,) provide that the entire structure below the 3-hour occupancy separation is protected throughout by an automatic sprinkler system. Using this provision, numerous buildings were built under the Uniform Building Code having multiple assembly rooms. This provision would actually not clarify the code, but would make the code more restrictive. This was indicated by one of the code review committee members who participated in the development of this section and stated that this would not clarify but would make the code more restrictive. It would result in numerous buildings that were built under this provision now being in violation of the code while no justification has been presented to represent that there is a problem related to this design technique. Therefore, this provision should be returned to the wording that currently exists in the code as proposed above.

G123-03/04
508.2

Proposed Change as Submitted:

Proponent: Ed Schultz, Code Consultants, Inc (CCI); representing CCI

Revise as follows:

508.2 Group S-2 enclosed or open parking garage with Group A, B, M, or R above. A basement and/or the first story above grade plane of a building shall be considered as a separate and distinct building for the purpose of determining area limitations, continuity of fire walls, limitation of number of stories and type of construction, when all of the following conditions are met:
1. The basement and/or the first story above grade plane is of Type IA construction and is separated from the building above with a horizontal assembly having a minimum 3-hour fire-resistance rating.
2. Shaft, stairway, ramp or escalator enclosures through the horizontal assembly shall have not less than a 2-hour fire-resistance rating with opening protectives in accordance with Table 715.3.

Exception: Where the enclosure walls below the horizontal assembly have not less than a 3-hour fire-resistance rating with opening protectives in accordance with Table 715.3, the enclosure walls extending above the horizontal assembly shall be permitted to have a 1-hour fire-resistance rating provided:

(No change to items 1,2, and 3)

3. (No change)
4. The building below the horizontal assembly is a Group S-2 enclosed or open parking garage, used for the parking and storage of private motor vehicles.

(No change to remainder of text)

Reason: Group S-2 open parking garage should also be permitted on the grade level based on the following:

Although Section 508.7 has requirements for an open parking garage beneath other use groups, this section can be more restrictive with regard to the classification of the building above the open parking garage. Section 508.7 requires the building above to measure height in both feet and number of stories from grade. As such, if a two story building were constructed above the one story open parking garage beneath, then the building above would be classified as a three story building. This would prohibit the building from using the two story unlimited area building provisions of Section 507.3.

Section 508.2 would permit the use of the two story unlimited are building provisions of Section 507.3 for a two story building above the parking garage. However, per Section 508.2, the parking garage is required to be enclosed. Due to open parking structures being less hazardous than enclosed parking structures as a result of the natural ventilation provided, it is logical for Section 508.2 to permit open parking structures to be located beneath the other use groups.

Cost Impact: None

Committee Action: Disapproved

Committee Reason: The change would make this section inconsistent with Section 508.7.

Assembly Action: None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Ed Schultz, Code Consultants, Inc., requests Approval as Submitted.

Commenter's Reason: Section 508.2 addresses an entirely different option under the code than Section 508.7 does. Section 508.2 allows the building above to be classified as a separate and distinct building for the purpose of determining area limitations, continuity of fire walls, limitation or number of stories and type of construction when meeting all the conditions stated in that provision. Section 508.7 considers the open parking structure and the building above as a single building therefore representing a completely separate provision of the code, each of which allows their own design flexibility. The only purpose of the submitted change is to bring to the attention that if Section 508.2 is an acceptable construction option when the S-2 parking is enclosed then it should also be permitted as a design concept if the S-2 parking is an open parking garage. Therefore, we ask the membership to overturn the committee's action since it does not represent any inconsistency with Section 508.7.

G128-03/04
Table 602; R302.1

Proposed Change as Submitted:

Proponent: Roger Robertson, Chesterfield County, Virginia; representing Chesterfield County, Virginia

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

1. (IBC) Revise footnotes as follows:

TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE[a]

(No change to current table)

For SI: 1 foot = 304.8 mm.
a. Load-bearing exterior walls shall also comply with the fire-resistance rating of Table 601.

~~b. Group R-3 and Group U when used as accessory to Group R-3, as applicable in Section 101.2 shall not be required to have a fire-resistance rating where fire separation distance is 3 feet or more.~~

~~c~~ b. See section 503.2 for party walls.

2. (IRC) Revise as follows:

R302.1 Exterior walls. Exterior walls with a fire separation distance less than ~~3 feet (914 mm)~~ 5 feet shall have not less than a one-hour fire-resistance rating with exposure from both sides. Projections shall not extend to a point closer than ~~2 feet (610 mm)~~ 4 feet 1220 mm) from the line used to determine the fire separation distance.

Exception: Detached garages accessory to a dwelling located within 2 feet of a lot line may have roof eave projections not exceeding 4 inches.

Projections extending into the fire separation distance shall have not less than one-hour fire resistive construction on the underside. The above provisions shall not apply to walls which are perpendicular to the line used to determine the fire separation distance.

Exception: Detached tool and storage sheds, playhouses and similar structures exempted from permits ~~by R105.2~~ 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.

R302.2 Openings. Openings shall not be permitted in the exterior wall of a dwelling or accessory building with a fire separation distance less than ~~3 feet (914 mm)~~ 5 feet. This distance shall be measured perpendicular to the line used to determine the fire separation distance.

Exceptions:
1. Openings shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.
2. Foundation vents installed in compliance with this code are permitted.

R302.3 Penetrations. Penetrations located in the exterior wall of a dwelling with a fire separation distance less than ~~3 feet (914 mm)~~ 5 feet shall be protected in accordance with Section R317.3.

Exception: Penetrations shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.

Reason: This proposed change will coordinate the requirements in the IBC and the IRC with respect to the separation distance required between adjacent exterior walls and the openings in these walls. The codes should provide no less protection for a three-story residence as they provide for a four-story residence. By coordinating these requirements, confusion will be eliminated in those situations where both types of dwellings are being constructed.

Cost Impact: None

Item 1 (IBC)
Committee Action: **Disapproved**

Committee Reason: The proposed change would be inconsistent with Table 704.8. In addition no data was provided for technical justification.

Assembly Action: **None**

Item 2 (IRC)
Committee Action: **Disapproved**

Committee Reason: There has been no statistical data presented on fires to justify this change.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Roger M. Robertson, Chesterfield County, representing Virginia Building and Code Officials Association requests Approval as Modified by this Public Comment for Item 2

Retain committee action for disapproval of Item 1.

Modify item 2 of proposal as follows:

2. (IRC) Modify the proposed change to the IRC as follows:

R302.1 Exterior walls. Exterior walls with a fire separation distance less than 5 feet shall have not less than a 1-hour fire resistance rating with exposure from both sides. Projections shall not extend to a point closer than 4 feet from the line used to determine the fire separation distance.

Projections extending into the fire separation distance shall have not less than a 1-hour fire resistance rating on the underside. The above provisions shall not apply to walls ~~which~~ that are perpendicular to the line used to determine the fire separation distance.

Exception: Detached tool and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot.

R302.2 Openings. Openings shall not be permitted in the exterior wall of a dwelling or accessory building with a fire separation distance less than ~~5 feet~~ 3 feet. Openings in excess of 25% of the area of the wall shall not be permitted in the exterior wall of a dwelling or accessory building with a fire separation distance between 3 and 5 feet. This distance shall be measured perpendicular to the line used to determine the fire separation distance.

Exceptions:
1. Openings shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.
2. Foundation vents installed in compliance with this code are permitted.

R302.3 Penetrations. Penetrations located in the exterior wall of a dwelling with a fire separation distance less than 5 feet shall be protected in accordance with Section R317.3.

Exception: Penetrations shall be permitted in walls that are perpendicular to the line used to determine the fire separation distance.

Commenter's Reason: To address committee concerns, this proposed modification deletes the proposed change to the IBC and modifies the proposed change to the IRC so that the provisions of the IBC and IRC are consistent. The modification will eliminate the difficulties and confusion that often arise when structures being built according to the IBC and other structures being built in accordance with the IRC are being built in one development.

G131-03/04
603.1

Proposed Change as Submitted:

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

Revise as follows:

603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:

1. Fire-retardant-treated wood shall be permitted in:
   1.1. Nonbearing partitions where the required fire-resistance rating is 2 hours or less.
   1.2. Nonbearing exterior walls where no fire rating is required.
   1.3. Roof construction as permitted in Table 601, Note c, Item 3.

2. Thermal and acoustical insulation in accordance with Section 719, ~~other than foam plastics~~, having a flame spread index of not more than 25.

Exceptions:
1. and 2. (No change to current text)
3. Foam plastics in accordance with Chapter 26.
4. Roof coverings that have ~~an~~ a Class A, B or C classification in accordance with Section 1505.
5. through 7. (No change to current text)
8. Nonload-bearing walls and ~~P~~partitions dividing portions of stores, offices or similar places occupied by one tenant only and which do not establish a corridor serving an occupant load of 30 or more shall be permitted to be constructed of fire-retardant-treated wood, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.
9. through 14. (No change to current text)
15. Nailing or furring strips as permitted by Section 803.4.~~803.3.~~
16. through 22. (No change to current text)

Reason: The purpose of this proposal is to coordinate certain Items of Section 603.1 with the rest of the IBC. For the most part, these revisions will establish the basis for the item in the same manner as is currently done in the other items of Section 603.1.

Item 2 exempts thermal and acoustical insulation other than foam plastics having a flame spread index of not more than 25. A higher flame spread index is possible as noted in the Exceptions to Item 2. The revision will limit this to thermal and acoustical insulation that is in accordance with Section 719, which contains the relevant technical provisions for their installation. The phrase "other than foam plastics" is deleted because it is redundant with the inclusion of Section 719. Exception 2 to Section 719.1 exempts foam plastic insulation from compliance with Section 719 and requires compliance with Chapter 26. Note that Exception 1 to Section 719.1 exempts fiberboard insulation from compliance with Section 719 and requires compliance with Chapter 23. Also, Exception 3 to Section 719.1 exempts duct and pipe insulation and duct and pipe coverings and linings from compliance with Section 719, and requires compliance with the International Mechanical Code. Neither of these is currently noted in Item 2 of Section 603.1.

Item 4 exempts roof coverings that have an A, B or C classification. The revision will establish that the classification shall be in accordance with Section 1505 for fire retardancy.

Item 8 exempts partitions dividing portions of stores, offices and similar places occupied by one tenant with restrictions on occupant load and the method of construction of the partition. "Partition" is not defined in the IBC, whereas "load-bearing wall" and "nonload-bearing wall" are defined in Section 1602.1. An exhaustive search for "partition" in the IBC was conducted. Its use was discovered in approximately 10 locations. At this time, its deletion is probably not warranted. However, the lack of the term "nonload-bearing wall" implies that partitions are exempted but nonload-bearing walls are not. I don't believe that is the intent nor that load-bearing partitions are intended. The proposed revision will make the intent clear.

In Item 15, the change from Section 803.3 to 803.4 is the result of the addition of Section 803.2 (Interior Wall or Ceiling Finishes Other Than Textiles) in the 2003 IBC.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: The committee believes that the terminology "non-load bearing walls" is beyond what is intended to be allowed for "partitions". Partitions are viewed as not being full room height; non-load bearing walls could be construed as being full height.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Phillip Brazil, PE, Reid Middleton, Inc., representing himself, requests Approval as Modified by this Public Comment.

Modify proposal as follows:

Delete proposed change to item 2 of Section 603.1 (remainder of proposal as proposed)

Commenter's Reason: My original intent was to make clear that Item 8 does not apply to bearing walls. As stated in my original reason statement, "partition" is not defined in the IBC, whereas "load-bearing wall" and "nonload-bearing wall" are defined in Section 1602.1. The lack of a definition for "partition" could lead a code user to conclude that it includes "load-bearing partitions." The lack of a definition still concerns me. But I am happy to defer to the Committee's belief that a "partition" is viewed as less than full-room height. This belief should preclude code users from applying Item 8 to load-bearing walls.

G137-03/04
1208.2

Proposed Change as Submitted:

Proponent: Wayne Grossman, Montgomery County Maryland; representing Department of Permitting Services

Revise as follows:

1208.2 Minimum ceiling heights. Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms within a dwelling unit shall be permitted to have a ceiling height of not less than 7 feet (2134 mm).

Exceptions:

1. through 3. (No change to current text)
4. In other then dwelling units, storage rooms greater then 300 square feet shall have a minimum ceiling height of 7 feet (2134 mm).
5. In other then dwelling units, storage rooms less then 300 square feet shall not be limited by the minimum ceiling height.

Reason: This proposal is to identify in the code the requirement for minimum ceiling heights in some storage rooms not clearly addressed in current code. Code Interpretation No. 26/201/77 of (BOCA) "International Code Interpretations, 8th Edition identifies storage areas as not falling within the definition of "Occupiable Spaces" and as such is not regulated by the minimum ceiling height requirements. Table 1004.1.2 Maximum Floor Area Allowances Per Occupant (IBC), provides an occupant load for accessory storage at 300 square feet/person therefore every storage room exceeding 300 square feet is essentially considered to be occupied by at least one person. Section 1008.1.1 Exception #3 Size of doors (IBC) requires minimum egress door widths at any storage room 10 square feet or more in area. Exit/egress lights are not exempted from warehouses and large storage rooms. The allowance of 7 foot ceiling height in bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms should be clearly identified as applying to dwelling units only. Kitchens, laundry rooms in non-dwelling occupancy should be limited to the 7 foot 6 inch minimum ceiling heights.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: This proposal could result in scenarios where employees needing to access store rooms frequently in various occupancies, such as restaurants, would be working on their hands and knees.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Don K. Davies, Salt Lake City Corporation, representing Utah Chapter of ICC, requests Approved as Modified by this comment.

1208.2 Minimum ceiling heights. Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms within a dwelling unit shall be permitted to have a ceiling height of not less than 7 feet (2134 mm).

Exceptions:

1. through 3. (No change to current text)
4. ~~In other then dwelling units, storage rooms greater then 300 square feet shall have a minimum ceiling height of 7 feet (2134 mm).~~
5. ~~In other then dwelling units, storage rooms less then 300 square feet shall not be limited by the minimum ceiling height.~~

Commenter's Reason: Adding the words "within a dwelling unit" clarifies that these provisions only apply to dwelling units. All the provisions of 1208 apply only to dwelling units. The committee's reason for the rejection of the proposed exception is justified.

G143-03/04
3002.4

Proposed Change as Submitted:

Proponent: Greg Victor, Glendale Fire Department, AZ; representing Western Regional Fire Code Action Committee

Revise as follows:

3002.4 Elevator car to accommodate ambulance stretcher. In buildings four stories in height or more, at least one elevator shall be provided for fire department emergency access to all floors. Such elevator car shall be of such a size and arrangement to accommodate an ~~24-~~

~~inch by 76-inch (610 mm by 1930 mm)~~ ambulance stretcher of the largest size used by the jurisdiction providing medical services in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) high and shall be placed inside on both sides of the hoistway door frame.

Reason: This proposed change will require the building official to determine the largest stretcher size used by the jurisdiction providing medical services to the area where the building is located and to require at least one elevator to accommodate that stretcher. The stretchers used in our area measure 82 inches by 24 inches and includes three different manufacturers. There has recently been some discussion during construction of a sports arena that the building only had to meet the code minimum which would not serve the needs of our equipment. This proposal changes a prescriptive requirement that referenced older stretchers to a performance requirement so that in all areas the elevators will serve the stretchers used by the medical service providers.

Cost Impact: None

Committee Action: **Disapproved**

Committee Reason: There is no evidence that the current dimensional limitations are inadequate. That fact notwithstanding, it would be undesirable to require a designer to check fire department equipment for every community. Uniformity in dimensional requirements for accessible elevators has been achieved. A convention should be able to be established here as well.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gregory G. Victor, Glendale, Arizona Fire Department, requests Approval as Modified by this Public Comment.

Replace proposal with the following modification to current text:

3002.4 Elevator car to accommodate ambulance stretcher. In buildings four stories in height or more, at least one elevator shall be provided for fire department emergency access to all floors. Such elevator car shall be of such a size and arrangement to accommodate a 24 inch by ~~76~~ 84 inch (610 mm by ~~1930~~ 2134 mm) ambulance stretcher in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of Life). The symbol shall not be less than 3 inches (76 mm) high and shall be placed inside on both sides of the hoistway door frame.

Commenter's Reason: In Nashville the committee stated that they did not want the Building Official to have to seek out what size stretcher each fire or ambulance jurisdiction used, but would prefer seeing the specific dimensions listed. I measured three different manufacturer's stretchers used by the ambulance service in our area and all three measured 24 by 82 inches. In order to provide proper medical care to heart and back injury patients, just to name two, they must be in the prone position. This change will allow the medics to correctly stabilize the patient during transport. Just think about if the patient was you.

G146-03/04
3109.5

Proposed Change as Submitted:

Proponent: Gary S. Duren, Code Compliance, Inc.

1. Delete and substitute as follows:

~~**3109.5 Entrapment avoidance.** Where the suction inlet system, such as an automatic cleaning system, is a vacuum cleaner system which has a single suction inlet, or multiple suction inlets which can be isolated by valves, each suction inlet shall protect against user entrapment by an approved antivortex cover, a 12-inch by 12-inch (304 mm by 304 mm) or larger grate, or other approved means.~~

~~In addition, all pools and spas shall be equipped with an alternative backup system which shall provide vacuum relief should grate covers be missing. Alternative vacuum relief devices shall include one of the following:~~
~~1. Approved vacuum release system.~~
~~2. Approved vent piping.~~
~~3. Other approved devices or means~~.

3109.5 Entrapment avoidance. Suction outlets shall be designed to produce circulation throughout the pool or spa. Single outlet systems, such as automatic vacuum cleaner systems, or other such multiple suction outlets whether isolated by valves or otherwise shall be protected against user entrapment.

3109.5.1 Suction Fittings. All Pool and Spa suction outlets shall be provided with a cover that conforms with ANSI/ASME A112.19.8M, or a 12"X 12"drain grate or larger, or an approved channel drain system.

Exception: Surface Skimmers

3109.5.2 Atmospheric Vacuum Relief System Required. All pool and spa single or multiple outlet circulation systems shall be equipped atmospheric vacuum relief should grate covers located therein become missing or broken. Such vacuum relief systems shall include at least one approved or engineered method of the type specified herein, as follows:
1. Safety vacuum release systems conforming to ANSI/ASME A112.19.17, or
2. Approved gravity drainage system.

3109.5.3 Dual Drain Separation. Single or multiple pump circulation systems shall be provided with a minimum of two (2) suction outlets of the approved type. A minimum horizontal or vertical distance of three feet (3') shall separate such outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum relief-protected line to the pump or pumps.

3109.5.4 Pool Cleaner Fittings. Where provided, vacuum or pressure cleaner fitting (s) shall be located in an accessible position(s) at least six (6) inches and not greater than twelve (12) inches below the minimum operational water level or as an attachment to the skimmer(s)."

2. Add new standards to Chapter 35 as follows:

ANSI/ASME A112.19.8M-1987 Suction Fittings for Use In Swimming Pools, Wading Pools, Spas, Hot Tubs and Whirlpool Bathing Appliances AG106.2

ASME A112.19.17 Manufacturers Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub and Wading Pool . . . AG106.3

Reason: To eliminate vague, ambiguous requirements from the code and provide enforceable criteria for swimming pool entrapment avoidance consistent with the IRC Final Action last year.

Pool and Spa Entrapment Injuries: "The proponent recognizes that there are too many documented cases where death or life threatening injury have occurred due to swimming pool, spa, hot tub, wading pool, whirlpool, therapy unit (hereafter referred to collectively as "pool & spa") drain or suction fitting entrapments in public and residential (private) properties. While several current state codes and standards for pools and spas contain requirements intended to prevent evisceration, body entrapment and hair entanglement/entrapment. However, numerous incidents continue to occur and too often result in death. The proponent believes that this International code change proposal can further reduce the possibility of evisceration, body entrapment and hair entrapment/entanglement. However, this proponent and this code change do not represent that all possible approaches for addressing the identified hazards are addressed herein.

Evisceration/Disembowelment:The U.S. Consumer Product Safety Commission (CPSC) received reports of fifteen (15) incidents of evisceration/disembowelment between 1980 and 1996. While the CPSC records indicate that no deaths were associated with the reported incidents, the injuries sustained were irreversible and have a devastating effect on the victims' future health and development.

The typical scenario leading to disembowelment involved a young child, 2 to 6 years old, who sits on the uncovered drain of a public wading pool. The incidents occur primarily in public wading pools where a floor drain cover is broken or missing, although there is an indication that one case may have involved an open top skimmer.

A relatively short time exposure to a small change in pressure may be sufficient to cause such an injury. Young children have access to the bottom drain in wading pools because of the shallow water. Generally, shallow drains are equipped with "anti-vortex" covers whose shape or design make complete sealing of the drain opening by the body more difficult. However, if such a cover or grate is unfastened, missing or broken, exposure to the drain suction force could produce evisceration.

Body Entrapment:The CPSC is aware of nine (9) cases of body entrapment, including seven (7) confirmed deaths, between January 1990 and May 1996. The deaths were the result of drowning after the body, or a limb, was held against the drain by the suction of the circulation pump. Six (6) of the incidents occurred in spas, two (2) of the incidents occurred in swimming pools, and one (1) occurred in a wading pool. In one case a 16-year-old girl became trapped on a 12" X 12" drain grate in a large public spa and died.

These incidents typically involve older children (8 to 16 years of age) with an average age of about ten (10) years. In some cases, it appears that the child was playing with the open drain, including inserting a hand or foot into the pipe, and then became trapped by the resulting suction. There are potentially many different circumstances of design and maintenance that can produce the conditions for this hazard. Body entrapment cases can occur in either pools or spas. Experience suggests that any open drain, or any flat grating that a body or limb can cover completely, coupled with a plumbing layout that allows sufficient buildup of suction if the drain is blocked, produce the conditions which can result in body entrapment.

Hair Entrapment/Entanglement: The CPSC is aware of thirty (30) reported incidents in spas and hot tubs since 1990, of which ten (10) resulted in drowning deaths as a result of long hair becoming entangled in the drain grates. Typically, these incidents involve females with long, fine hair, who are underwater with their head near a suction inlet. The water flow into the inlet sweeps the hair into and around the outlet cover, and the hair becomes entangled on and around holes and protrusions in the cover. Entrapment occurs because of the tangling, and not necessarily because of the strong suction forces. These cases most often occur in spas, including hot tubs.

Since about 1982, industry voluntary standards for spa and hot tubs require that drain covers be certified for use at a maximum flow rate. It is difficult, however, to determine actual flow rates in custom-built spas, and thus to know if spas are equipped with the proper fitting to prevent hair entanglement. Some fittings available on the market since 1982 are manufactured to provide anti-vortex protection, and do provide a secondary benefit of some limited protection against body entrapment and hair entrapment/entanglement.

Layered Protection: Due to the severity of the issues the CPSC has developed a series of recommendations entitled "Guidelines for Addressing Potential Entrapment Hazards Associated with Swimming Pools and Spas". These reports, as well as various State Statutes, have set forth requirements for new construction and retrofitting of existing pool and/or spa installations. These recommendations are herein defined as "Layered Protection". The best possible protection level against such hazards is only achieved when three (3) layers of protection are provided. All three (3) layers must be required in order to offer the best possible protection against the hazards referenced above and shall minimally include, but are not limited to, the following requirements.

Layer 1 - Passive Drain Protection Methods: The CPSC recommendations on drain safety contain the concept of "passive drain protection". There are two (2) main approaches included under this area. The term passive applies to these methods, as there is no need for moving parts to insure efficient operation.

1.1 Multiple Drain and Channel Systems: The principle behind installing a multiple drain system is to prevent a single drain opening from becoming the sole inlet to the suction side of the pump. The installation of additional drains effectively divides the suction between the drains, provided the drain interconnecting piping is the same diameter and the piping configuration produces hydraulic balance.

Alternatively, a "channel type" drain could be installed in such a way as to prevent the "trapping off" or complete blockage of the main drain. The channel, possibly retrofitted onto either or both sides of a 12" X 12" grate, would provide a larger surface area to maintain the desired flow. This channel arrangement would minimize the chance of an entrapment hazard since it would be difficult to completely seal or trap off.

IMPORTANT NOTE: The effectiveness of these options against disembowelment injuries is not clearly understood because of the lack of data surrounding the pressure differential required to cause such an injury, and the effect of duration of exposure to the available suction. Disembowelment injuries to children are believed to occur "almost instantaneously" at relatively small pressure differentials. The effectiveness of a multiple drain system in preventing disembowelment is dependent, in part, upon site-specific conditions, i.e. the number of drains, the size of the drains, the hydraulic balance between the drains, and the power of the pumping system.

Gravity Feed and Vent Stack Systems

Gravity Feed Systems-In a gravity feed system a separate tank collects water by means of gravity flow, and the pump suctions are then plumbed to the tank. This method of circulating, filtering and/or heating and jetting the pool water removes the direct high vacuum condition from the pool main drains and skimmers, and applies it to the gravity feed tank, which is generally not occupied.

Vent Stack Systems-The use of a vent stack or stacks may remove high vacuum forces from the main drain or skimmer in case a blockage should occur. The vent stack would be connected to the main drain suction line between the drain and the pump and would be open to atmosphere. The laws of physics require the stack to fill with water to a level equal to that of the pool. Should the drain become clogged or obstructed, the pump would then draw the water from the vent stack until air is introduced into the system and the suction is thereby broken.

IMPORTANT INFORMATION: The use of these passive systems may reduce the likelihood of suction entrapment and subsequent drowning, however, the effectiveness of these systems against disembowelment injuries is not known because of the lack of data surrounding the pressure differential required to cause such an injury.

There are some additional concerns regarding the use of vent stack systems. It may be difficult to keep these systems clean of algae, biological contaminants and other infestation. Also there would be no indication if the vent stack system were to become blocked or obstructed. Should the vent become blocked or obstructed, the safety provided by such a system would be rendered ineffective.

ASME Drain Protection Methods: The American Society of Mechanical Engineers, A112 Plumbing Materials and Equipment Standards Committee developed ANSI/ASME A112.19.8M to address performance requirements for suction fittings used in pools and spas. The standard requires that cover materials be tested for structural integrity. Additionally, the cover must be tested for entrapment/entanglement potential. Suction fitting covers are required to be marked with a flow value in gallons per minute (gpm) that indicates the maximum flow rate at which the cover has been approved.

IMPORTANT INFORMATION: The use of a cover under the conditions at which the maximum flow rate is exceeded can lead to entrapment hazards. A qualified pool professional must, during regular maintenance evaluate the field flow conditions, so as to reasonably determine that the rated flow through the fitting is not being exceeded. The suction fitting cover must be properly matched to the actual flow rate of the pool or spa.

Active Drain Protection Methods

Electrical Intervention Devices

Electrical Interrupt Devices

There are generally two types of electrical intervention devices. One form of intervention, which some States and the National Electric Code are considering, is an emergency pump cut-off switch located in view of the pool or spa. At the present time these switches are generally located in the electric equipment room, and are in the line of sight of the apparatus as opposed to the line of sight of the pool or spa. Another form of electrical intervention device involves a monitor or switch that responds to a sudden rise in pump suction vacuum by turning off the pump, and/or opening an electrically operated atmospheric vent valve.

IMPORTANT INFORMATION: A cut-off switch or pump shut-off switch should not be considered as a stand alone third layer protection means. It should always be used with other protection means for relieving the high vacuum condition caused by an entrapment condition. In the event of entrapment, the vacuum condition may not be sufficiently relieved by interrupting electrical power to the pump. Such vacuum forces can remain in place and impede rescue efforts.

Safety Vacuum Release System (SVRS) Non-Electric Device: Available data suggests that a Safety Vacuum Release System (SVRS) Non-Electric Device will effectively eliminate body entrapments. A child playing in the immediate vicinity of an SVRS Non-Electric Device-protected drain will cause the device to activate upon sealing off the drain fitting. The device effectively eliminates the high vacuum forces at the protected drain, and body entrapment can in this way be avoided entirely.

IMPORTANT INFORMATION: Due to the lack of physiological data, it cannot be concluded that a Safety Vacuum Release System Non-Electric Device will eliminate all potential for disembowelment.

CURRENT CPSC STATISTICS FROM 1/95 TO 7/00

ENTRAPMENTS	RESULTED IN DEATH
16 HAIR	5
39 BODY	5
5 UNKNOWN	0

NOTE: 1. All reported cases involve children
2. Above does not include 4 recent Florida entrapment cases resulting in death
3. Does not include entrapments simply recorded as "drowning".
4. Source Consumer Product Safety Commission

Bibliography: *"United States Consumer Product Safety Commission Publication No. 363 009801."*

Analysis: The referenced standards proposed for IBC Chapter 35 are presently referenced in the IRC.

Cost Impact: Will increase the cost of construction.

Committee Action: Disapproved

Committee Reason: The prescriptive provisions would discourage technological innovation.

Assembly Action: As Submitted

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted and an assembly action was successful.

Public Comment:

Carvin DiGiovanni, National Spa and Pool Institute, requests Approval as Modified by this Public Comment.

Delete the proposal and substitute the following:

3109.5 Suction entrapment avoidance. To prevent suction entrapment, fully submerged suction outlets shall not be required in swimming pools; when used, suction outlet fittings shall comply with Sections 3109.5.1 through 3109.5.4.

Exception: Surface Skimmers

3109.5.1 Suction fitting covers. All fully submerged suction outlets shall be provided with a cover tested and approved by a nationally recognized testing laboratory in accordance with ASME/ANSI A112.19.8 -1987 (R 1996) "Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances."

Exception: Suction fitting covers larger than 18-inches (457 mm) by18-inches (457 mm) shall not be required to be tested in accordance with ASME/ANSI A112.19.8 -1987 (R 1996) "Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances."

3109.5.2 Suction fitting cover requirements. Pump suction outlets shall protect bathers from evisceration, hair entrapment, limb entrapment and mechanical entrapment by the use of suction fitting covers installed in accordance with the manufacturer's instructions. Each shall be rated to handle 100% of the circulation system flow. The design professional shall be responsible for verification of the circulation flow in accordance with the pump manufacturer's published data, the flow ratings of the covers, and the physical arrangement of the outlets and piping. Skimmers shall not be considered to reduce circulation system flow through suction outlet covers since their rate of flow will degrade with collected debris.

Suction outlet covers are permitted to be installed over field built sumps, provided that

1. There is a minimum clearance between the sump and cover of 1-inch (25mm) inside the perimeter of the mounting ring or finished edge.
2. There is distance of1 ½ times the inside diameter of the suction pipe measured above the suction pipe to the underside of cover.
3. Sump slopes uniformly between mounting ring or finished edge and pipe suction outlet covers shall be permitted to protrude into the swimming pool and shall have no accessible sharp edges, points, or surfaces capable of inflicting a cut.

To protect against body suction entrapment, one of the following shall apply:

1. A minimum of 2 suction outlets separated by at least 3 feet (914 mm), or installed on different planes, such as the floor and a wall.
2. A single combination inlet/outlet fitting, provided it is tested and approved for the application by a nationally recognized testing laboratory in accordance with ASME/ANSI A112.19.8 -1987 (R 1996) "Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances."
3. Single suction outlet covers, 24-inch (610 mm) by 24-inch (610 mm) or larger, provided there is a maximum open area of 60%, and the flow rate does not exceed 4.7 gpm per square inch of this open area (to limit the flow velocity to 1.5 feet per second). The suction outlet cover shall be designed to prevent removal by tampering.
4. Single suction channel(s) with a maximum open area of 60%. Width shall be from 3 to 12 inches (76 to 305 mm). The aggregate length shall be at least 33 inches (84mm) plus the width. The flow rate shall not exceed 4.7 gpm per square inch of this open area (to limit the flow velocity to 1.5 feet per second). The suction outlet cover shall be designed to prevent removal by tampering.

3109.5.3 Vacuum relief backup system required. Pump suction outlets with covers located fully below the water line shall be protected against body suction entrapment by one of the following:

1. Safety vacuum release systems conforming to ANSI/ASME A112.19.17 – 2002, "Manufactured Safety Vacuum Release Systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems".

2. Gravity flow circulation from the suction outlet fitting to a reservoir vented to atmosphere. The gravity flow system shall be engineered not to exceed the maximum rated water flow of any suction outlet cover and shall not include valves capable of providing direct suction to any bather accessible location.
3. Vent to atmosphere located in the suction pipe between the pump and suction outlets, engineered to relieve a vacuum at the suction outlet within 3 seconds of the suction outlet cover being blocked. The vent to atmosphere shall be by means unable to be blocked by reasonably foreseeable environmental conditions. Permanent labels shall clearly identify the vent to atmosphere as a safety device and provide winterizing instructions where applicable.

Exception: Combination inlet/outlet fittings tested and approved for the application by a nationally recognized testing laboratory in accordance with ASME/ANSI A112.19.8 -1987 (R 1996) "Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances."

3109.5.4 Pool cleaner fittings. Where provided, vacuum cleaner fitting(s) shall be located in an accessible position(s) at least 6-inches (152 mm) and not greater than 18-inches (457 mm) below the minimum operational water level and shall be provided with self-closing covers that cannot be opened without the use of a tool, or a threaded plug that cannot be removed without the use of a tool, or as an attachment to the skimmer(s)."

2. Add new standards to Chapter 35 as follows:

ASME/ANSI A112.19.17 - 2002, "Safety Vacuum Release Systems for Swimming Pool Suction Fittings and Drains"

ASME/ANSI A112.19.8 – 1987 (R 1996) "Suction Fittings for Use in Swimming Pools and Wading Pools, Spas, and Hot Tubs."

Commenter's Reason: Since the ICC public hearings held in Nashville TN, on September 5-14, 2003, the National Spa and Pool Institute (NSPI) has held several successful industry meetings on entrapment to improve the language of G146-03/04, 3109.5; IRC AG106 (as approved by Assembly Action). On December 15, 2003, the Technical Committee of the NSPI hosted an industry wide open forum on entrapment. In the attendance were many leading manufacturers of suction fitting covers, pumps, SVRS devices, the U.S Consumer Product Safety Commission and other interested parties. The purpose of the forum was to 1) share current thinking on entrapment avoidance methods and technology, 2) discuss entrapment incidences and most important, 3) develop a consensus on proposed language to improve G146-03/04 3109.5; IRC AG106.

At the recent January 12, 2004 meeting of the ASME A112.8 standards writing committee on suction outlet covers there was a discussion of three entrapment incidences on 12" by 12" grates. At the conclusion of these deliberations, it was recommended the proposed ICC code be amended to now call for 24" by 24" grates instead of 12" by 12" grates. This recommendation is included above.

In summary, the NSPI is not objecting to the content of G146-03/04 3109.5; IRC AG106 but wishes to take advantage of the recent wording achieved at the industry forums and committee meetings and incorporate them into G146-03/04 3109.5; IRC AG 106 without changing its intent. Other than changing the requirement to 24" by 24" grates from 12" by 12" grates, the above language allows the incorporation of the latest thinking and additional technology to prevent suction entrapment hazards.

Analysis: The revisions to Item 2 are editorial, showing correct title and designations of the standards.