E2-06/07
1001.4

Proposed Change as Submitted:

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

Add new text as follows:

1001.4 Emergency planning. Emergency planning and preparedness provisions shall be provided for all occupancies and buildings as required by Chapter 4 of the *International Fire Code*.

Reason: The purpose of this code change proposal is to provide consistent requirements for jurisdictions regarding emergency planning and preparedness. Many jurisdictions across the country currently have adopted the IBC, however many of these same jurisdictions have not adopted the IFC. Hence, this proposed code change will provide consistent requirements for emergency planning and preparedness in all jurisdictions that adopt the IBC. Effectively, the IBC will adopt all of the emergency planning and preparedness provisions in the IFC.

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

Committee Action: **Disapproved**

Committee Reason: The intent is well founded, however, locating emergency planning requirements in Chapter 10 is inappropriate. Emergency planning is not a construction issues. Emergency planning is the purview of the IFC and the maintenance part of these plans are enforced by the fire officials.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Paul K. Heilstedt, PE, Chair, ICC Code Technology Committee (CTC) and Dave Frable, U.S. General Service Administration request Approval as Modified by this public comment.

Replace proposal with the following:

1001.4 Fire safety and evacuation plans: Fire safety and evacuation plans shall be provided for all occupancies and buildings where required by the International Fire Code. Such fire safety and evacuation plans shall comply with the applicable provisions of the International Fire Code.

Commenter's Reason: The committee action notes a concern over the location of the text. While emergency planning is not a construction issue, it is clearly an issue which needs to at least be referenced in the building code in order for the designer to be aware that after the building is constructed, there are provisions in the IFC that will be applied on the day the building is occupied. Further, not all jurisdictions adopt the IFC. This reference will ensure that at least the fire safety and evacuation plans of the IFC are adopted by reference. Enforcement of the provisions is not an issue. The provisions are clearly within the scope of the IFC.

Final Action: AS AM AMPC ____ D

E4-06/07
1002.1 (IFC [B] 1002.1)

Proposed Change as Submitted:

Proponent: Tom Wandrie, ICC 300 Development Committee

Revise definitions as follows:

1002.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

BLEACHERS. Tiered seating ~~facilities~~ supported on a dedicated structural system and two or more rows high (see Grandstands).

GRANDSTANDS. Tiered seating ~~facilities~~ supported on a dedicated structural system and two or more rows high (see Bleachers).

FOLDING AND TELESCOPIC SEATING. Tiered seating facilities ~~having an overall shape and size that is~~ capable of being retracted or reduced in overall size and shape for purposes of moving or storing.

Reason: Bleachers, Grandstands and Folding and Telescopic Seating are addressed in ICC 300. The definitions should be coordinated in both documents so that it is clear when the standard is applicable. The definitions in the current IBC were submitted by the ICC 300 Development Committee in E68-02.

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

Committee Action: **Disapproved**

Committee Reason: There is no difference between the proposed definitions for bleachers and grandstands. The term 'retracted or reduced' is confusing.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Tom Wandrie, ICC 300 Development Committee, requests Approval as Modified by this public comment.

Modify proposal as follows:

FOLDING AND TELESCOPIC SEATING. Tiered seating ~~facilities~~ capable of being ~~retracted or~~ reduced in overall size and shape for purposes of moving or storing.

(Portions of proposals not shown remain unchanged)

Commenter's Reason: The current definition for Bleacher and Grandstand are both the same ("Tiered seating facilities") because the terms are used interchangeably. The ICC 300 Development Committee agreed that they still should be the same with some additional clarification. The ICC 300 Committee's intention is to replace the term "Facilities" in all three definitions with descriptions of the seating and support systems that would differentiate them from other more permanent elements of a building. Freestanding bleachers, grandstands, and folding and telescopic seating are easy to picture as "Tiered Seating". However, when you add the term "Facilities" it conjures up images of a whole facility such as an; arena, gymnasium, auditorium, place of worship, etc.. These venues may have some tiered seating that fits the definitions we are proposing to coordinate with the ICC 300. However, they are also likely to have seating systems attached to tiered or sloped structure that is an integral part of the building, which would be regulated by Section 1025 of the IBC.

Other elements of these facilities would be accessory use areas or mixed uses that could require fire-resistance rated floor and wall systems, which are also regulated under the IBC.

The proposed removal of the words "retracted or" in the definition for Folding and telescopic seating is in response to the MOE Committee observation that the term "retracted or reduced" is confusing. The term "retracted" is consistent with the way some Folding and Telescopic Seating is reduced in overall size and shape for the purpose of moving or storage. However, simply using the term "reduced" is more all inclusive of the methods used and less confusing. The proposed revisions indicated above to the definition for Folding and telescopic seating were incorporated in the final draft for the 2007 edition of the ICC 300.

Final Action: AS AM AMPC ____ D

E15-06/07
1005.1 (IFC [B] 1005.1)

Proposed Change as Submitted:

Proponent: Gregory R. Keith, Professional heuristic Development, representing The Boeing Company

Revise as follows:

1005.1 Minimum required egress width. The means of egress width shall not be less than required by this section. The total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by the factors in Table 1005.1 and not less than specified elsewhere in this code. Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available width ~~capacity~~ to less than 50 percent of the required width ~~capacity~~. The maximum required width ~~capacity~~ from any story of a building shall be maintained to the termination of the means of egress.

Exception: Means of egress complying with Section 1025.

Reason: Section 1005.1 prescribes the fundamental provisions for the proper determination of means of egress width. It includes minimum width determination procedures as well as apportionment and maintenance of width requirements. The term "width" should be consistently applied throughout the section. Currently, the more general term "capacity" is inappropriately used in three locations. The specific nature of Section 1005.1 necessitates consistency in terminology. By way of example, the last sentence in Section 1005.1 should specifically address required width because the last sentence of Section 1003.6 already covers the general capacity issue in stating "The required capacity of a means of egress system shall not be diminished along the path of egress travel." Approval of this proposal will clarify means of egress code provisions and assist in the uniform interpretation of these fundamental provisions.

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

Committee Action: **Disapproved**

Committee Reason: The required width can be larger than the capacity requirements, thus the proposed language could result in a significant increase for width. The corridor width would end up driving the width of the entire egress system.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Gregory R. Keith, Professional heuristic Development, representing the Boeing Company requests Approval as Modified by this public comment.

Modify proposal as follows:

1005.1 Minimum required egress width. The means of egress width shall not be less than required by this section. The total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by the factors in Table 1005.1 and not less than specified elsewhere in this code. Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available width to less than 50 percent of the required width. The maximum ~~required~~ width based on the occupant load served from any story of a building shall be maintained to the termination of the means of egress.

Exception: Means of egress complying with Section 1025.

Commenter's Reason: Section 1005.1 prescribes the fundamental provisions for the proper determination of means of egress width. It includes minimum width determination procedures as well as apportionment and maintenance of width requirements. The term "width" should be consistently applied throughout the section. Currently, the more general term "capacity" is inappropriately used in three locations. The specific nature of Section 1005.1 necessitates consistency in terminology. It was noted during discussion of this proposal in Orlando, as indicated in the published reason for disapproval, that the maximum width maintenance requirement could be interpreted as being driven by an individual minimum width requirement of a means of egress component such as a corridor as opposed to the occupant load actually served. This concern has been addressed through revised language in the ultimate sentence of the paragraph. Approval of this proposal will clarify means of egress code provisions and assist in the uniform interpretation of these fundamental provisions.

Final Action: AS AM AMPC ____ D

E17-06/07
1005.2 (IFC [B] 1005.2)

Proposed Change as Submitted:

Proponent: Ralph Vasami, The Kellen Company, representing The Door Safety Council

Revise as follows:

1005.2 Door encroachment. Doors opening into the path of egress travel shall not reduce the required width to less than one-half during the course of the swing. ~~When fully open~~, Excluding hardware, the door shall not project more than 7 inches (178 mm) into the required width when fully opened.

Exception: The restrictions on a door swing shall not apply to doors within individual dwelling units and sleeping units of Group R-2 and dwelling units of Group R-3.

Reason: This proposal modifies text regarding door encroachment. The existing code language fails to address the issue of hardware that is required as part of the door assembly to satisfy egress and security requirements. The proposed language seeks to clarify the manner in which the *Door Encroachment* language is enforced. Hardware projections should not be part of the measurement as they do not materially reduce the corridor width or impede egress flow.

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

Committee Action: **Disapproved**

Committee Reason: Based on the testimony, if the hardware can be up to 10 inches from tip to tip, taking away the door and one handle, exclusion of the hardware could result in an additional protrusion of up to 11 inches into the path for means of egress. The 7 inches should include the hardware. In addition, when the door open 90 degrees, the 7 inches is the obstruction, while if it opens 180 degrees, there is credit given for the hardware so it is not a protrusion - this seems inconsistent.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Ralph Vasami, The Kellen Company, representing The Door Safety Council, requests Approval as Modified by this public comment.

Replace proposal with the following:

1005.3 Door hardware encroachment. Surface-mounted latch release hardware shall be exempt from inclusion in the 7-inch maximum (178mm) projection requirement of 1005.2 when:

1. The hardware is mounted to the side of the door facing the corridor width when the door is in the open position and;
2. The hardware is mounted not less than 34 inches (865mm) nor more than 48 inches (1220mm) above the finished floor.

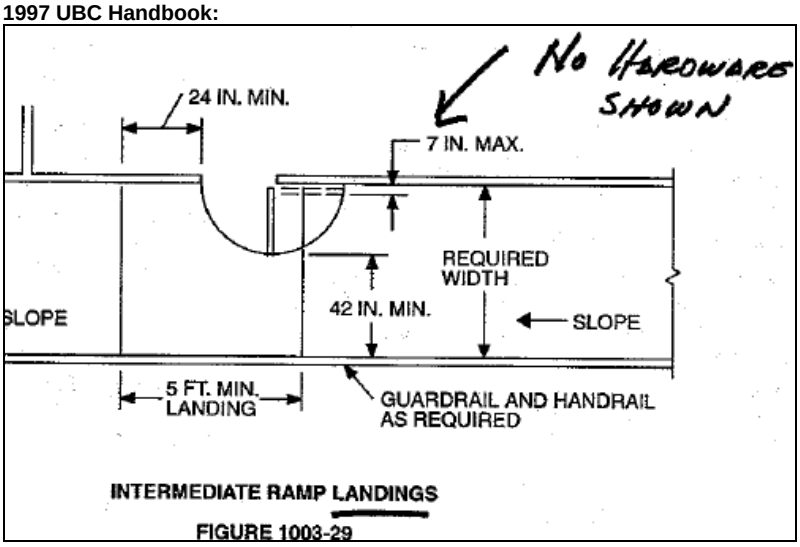
Commenter's Reason: The IFC and IBC requirements for door encroachment have not clearly addressed the issue of attached door latching hardware. The intent of the proposal as submitted was to clarify that door latching hardware should not be included in the dimensional requirement for door encroachment. The committee discussion and stated reasons for disapproval of E17 demonstrate the confusion surrounding this requirement. This public comment separates the door encroachment requirement from hardware, but adds restrictions on the height and mounting surface to capture the appropriate hardware encroachment prescriptions. The additional text is taken from NFPA 101 means of egress requirements.

The best illustration of just how confusing the current text is, and the best justification for this needed clarification, are the ICC Commentaries. The 7" door encroachment requirement is based upon legacy code provisions and has survived intact. In the *1997 UBC Handbook*, figure 1003-29 provides a detail with a dimension indicating a maximum of 7" door encroachment, but the figure shows no hardware and the dimension line leads to the edge of the door surface. Fast-forward to the 2000 *IBC Handbook Fire and Life-safety Provisions* and to figure 1003-5. In this detail, hardware has been added to the illustration but the 7" dimension line has moved to some vague point between the door slab and the doorknob. In the 2003 *IBC Commentary* Figure 1005.2, the detail has been modified to show accessible hardware instead of a doorknob, but the dimension line again leads to some vague spot on the door latch.

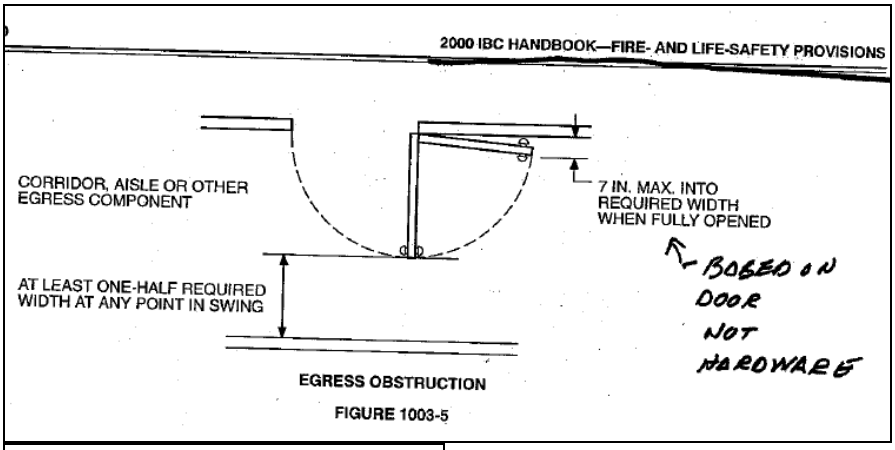
Despite the fact that the technical provision for door encroachment has not changed since the legacy codes, ICC artists have arbitrarily changed the details in the commentaries. The clarification provided by this proposal is necessary to clean up the ambiguity and resolve the issue in order to facilitate consistent code interpretations. The proposal is not a change in the requirement, merely a clarification made necessary by the confusion created by the ICC commentaries.

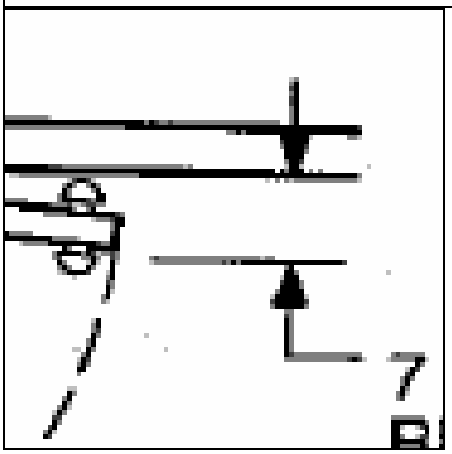
The following details are taken from the above referenced ICC and ICBO publications.

1997 UBC Handbook:



2000 IBC Handbook:





2003 IBC Commentary:

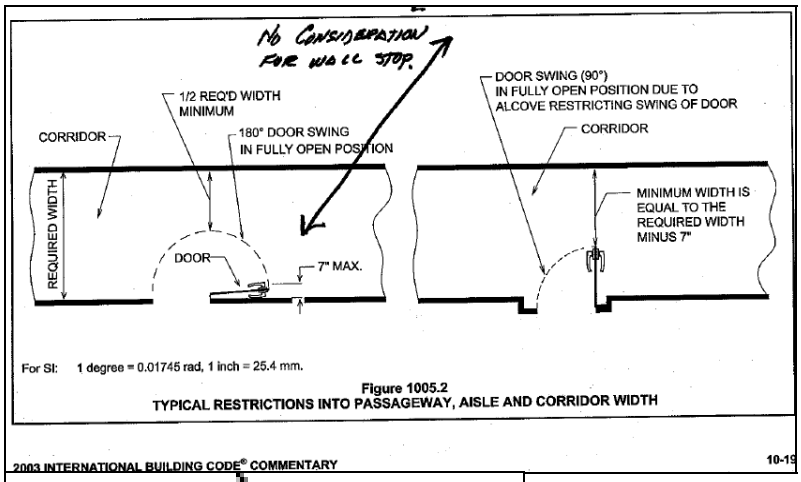
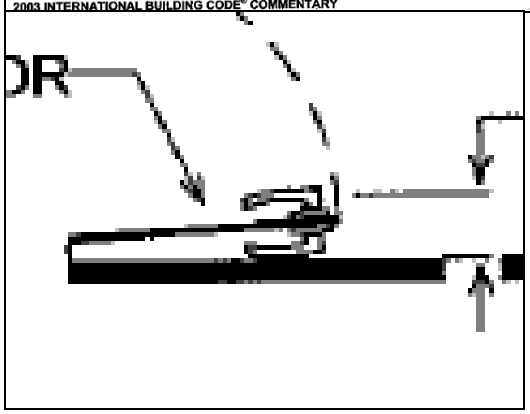


Figure 1005.2
TYPICAL RESTRICTIONS INTO PASSAGEWAY, AISLE AND CORRIDOR WIDTH



Final Action: AS AM AMPC ____ D

E25-06/07

1007.3, 1007.4 (IFC [B] 1007.3, [B] 1007.4)

Proposed Change as Submitted:

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

Revise as follows:

1007.3 Exit stairways. In order to be considered part of an accessible means of egress, an exit stairway shall have a clear width of 48 inches (1219 mm) minimum between handrails and shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge complying with Section 1007.6 or a horizontal exit.

Exceptions:

1. Unenclosed exit stairways as permitted by Section 1020.1 are permitted to be considered part of an a accessible means of egress.
2. The area of refuge is not required at unenclosed exit stairways as permitted by Section 1020.1 in buildings or facilities that are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
3. The clear width of 48 inches (1219 mm) between handrails is not required at exit stairways in buildings or facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
4. Areas of refuge are not required at exit stairways in buildings or facilities equipped throughout by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

~~4.~~ 5. The clear width of 48 inches (1219 mm) between handrails is not required for exit stairways accessed from a horizontal exit.

~~5.~~ 6. Areas of refuge are not required at exit stairways serving open parking garages.

1007.4 Elevators. In order to be considered part of an accessible means of egress, an elevator shall comply with the emergency operation and signaling device requirements of Section 2.27 of ASME A17.1. Standby power shall be provided in accordance with Sections 2702 and 3003. The elevator shall be accessed from either an area of refuge complying with Section 1007.6 or a horizontal exit.

Exceptions:

1. Elevators are not required to be accessed from an area of refuge or horizontal exit in open parking garages.
2. Elevators are not required to be accessed from an area of refuge or horizontal exit in buildings and facilities equipped throughout by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

Reason: The purpose of this Code change is to reinstitute into the Code the subject exceptions regarding not requiring areas of refuge (AOR) in buildings or facilities protected throughout by an automatic sprinkler system designed and installed in accordance with Section 903.3.1.1 or 903.3.1.2. The subject exceptions had been in all previous editions of the IBC; including each of the legacy Codes, which recognized any floor of a building protected throughout by an approved, operational automatic sprinkler system as an AOR. This recognition is based on sound technical research and acknowledges the ability of a properly designed and operational automatic sprinkler system to control a fire at its point of origin and to limit production of toxic products to a level that is not life threatening.

However, at the Final Action Hearings of the ICC in September 2005, the ICC membership voted to delete the subject two exceptions. However, no technical research data was provided to support any of the proponent's substantiation or rationale for deleting the exceptions for installing AOR in buildings protected throughout by an operational automatic fire sprinkler system.

Below, I have provided the technical research data that substantiated the rationale for not installing AOR in buildings that are protected throughout by an operational automatic fire sprinkler system in the previous editions of the IBC.

In 1989, at the request of Congress, the U.S. General Services Administration (GSA) undertook a project to construct AOR for persons with mobility limitations. In 1991, GSA funded the National Institute of Standards and Technology (NIST) to evaluate the concept of AOR as a means of providing fire protection for persons with disabilities in office buildings.

The NIST evaluation consisted of field tests, threat analysis, and a human behavior study of AOR in six office buildings. The threat analysis included hazards inside the AOR as well as hazards traveling to these areas for both sprinklered and unsprinklered office buildings.

In 1992, NIST issued their findings and recommendations in a report titled "*Staging Areas for Persons with Mobility Impairments*" – NISTIR 4770. The NIST report resulted in a number of conclusions regarding fire protection strategies for persons with disabilities that are believed to be applicable to many other buildings. The primary conclusion of the report was that the operation of a properly designed sprinkler system eliminates the life threat to all occupants regardless of their individual abilities and can provide superior protection for persons with disabilities as compared to staging areas.

To the best of our knowledge, no physical tests or scientifically based fire safety analysis of AOR's has occurred since the printing of this 1992 report. In addition, sprinkler technology has also improved since 1992. Quick response sprinklers are now required to be used where in 1992, standard response sprinklers were utilized.

Regarding some of the opinions expressed at the Final Action Hearings of the ICC in September 2005the regarding automatic sprinkler reliability. A recent comprehensive analysis in 2005 of high-rise fires by NFPA identified that no fatalities had occurred for more than a decade in any U.S. high-rise occupancy (> 10 story) other than the 6 fatalities in the unsprinklered Cook County Office Building (2003); the 1 fatality in the unsprinklered First Interstate Bank Building (1991); and 3 firefighter fatalities in the partially sprinklered (unsprinklered on floor of fire origin and several floors above) Meridan Plaza Building (1991). The Murrah Federal Building (1995) and the World Trade Center (1993 & 2001) bombings were excluded from this analysis.

The recently issued NFPA 2005 report on sprinkler reliability also indicated that automatic fire sprinklers successfully operating in reported structural fires was an exemplary 93%. In addition, NFPA also reported that 2/3rds of the reported automatic fire sprinkler system failures were because the automatic fire sprinkler systems were shut off. Since the IBC requires the supervision of the automatic fire sprinkler system, one can conclude that the successful operation of an automatic fire sprinkler system designed and installed in compliance with the IBC requirements could be reasonably estimated at 98%. NFPA also reported that the percentage of successfully operating automatic fire sprinkler systems is probably higher since a large percentage of small fire extinguished by fire sprinklers are not reported. Therefore, for an automatic fire sprinkler system designed and installed in accordance with the IBC requirements, the successful operation of an automatic fire sprinkler system could be reasonably estimated at 98% or more.

Based on all these points stated above, we strongly believe that it unreasonable not to recognize that any floor of a building protected throughout by an approved, operational automatic fire sprinkler system serve as an AOR. We believe the rationale is sound and based on technical research that acknowledges the ability of a properly designed and operational automatic sprinkler system to control a fire at its point of origin and to limit production of toxic products to a level that is not life threatening to all occupants of the building, including persons with disabilities. In addition, we believe the cost to construct AOR's will significantly increase building construction and maintenance costs without increasing the overall safety to the building occupants.

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

Committee Action: **Approved as Submitted**

Committee Reason: The sprinkler exception for areas of refuge was deleted from Sections 1007.2 and 1007.3 as part of the final action hearings of the 04/05 cycle. No technical justification was provided to support the deletion of this option. There has been no loss of life in sprinklered high rise buildings. In addition, the deletion of the exceptions have resulted in conflicts with the elevator protection provisions and smoke barrier construction. There would be significant ramifications to current building construction.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Roger Evans, Park City Municipal Corporation, representing Utah Chapter ICC, requests Approval as modified by this public comment.

Modify proposal as follows:

1007.3 Exit stairways. In order to be considered part of an accessible means of egress, an exit stairway shall have a clear width of 48 inches (1219 mm) minimum between handrails and shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge complying with 1007.6 or a horizontal exit.

Exceptions:

1. Unenclosed exit stairways as permitted by Section 1020.1 are permitted to be considered part of an accessible means of egress.
2. The area of refuge is not required at unenclosed exit stairways as permitted by Section 1020.1 in buildings or facilities that are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
3. The clear width of 48 inches (1219 mm) between handrails is not required at exit stairways in buildings or facilities equipped throughout with an automatic sprinkler system in accordance with Section 9033.3.1.2.
4. Areas of refuge are not required at exit stairways in buildings or facilities equipped throughout ~~by~~ with an automatic fire sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and, in addition, one of the following is provided:
   - 4.1. An accessible wheelchair space of at least 30 inches by 48 inches is provided within an enlarged floor-level landing of a vertical exit enclosure and such space does not encroach on the required egress width; or
   - 4.2. An elevator in accordance with Section 1007.4; or
   - 4.3. The building is equipped throughout with a smoke control system in accordance with Section 909.
5. The clear width of 48 inches (1219 mm) between handrails is not required for exit stairways accessed from a horizontal exit.
6. Areas of refuge are not required at exit stairways serving open parking garages.

1007.4 Elevators. In order to be considered part of an accessible means of egress, an elevator shall comply with the emergency operation and signaling devise requirements of Section 2.27 of ASME A17.1. Standby power shall be provided in accordance with Sections 2702 and 3003. The elevator shall be accessed from either an area of refuge complying with Section 1007.6 or a horizontal exit.

Exceptions:

1. Elevators are not required to be accessed from areas of refuge or horizontal exit in open parking garages.
2. Elevators are not required to be accessed from an area of refuge or horizontal exit in buildings or facilities equipped throughout ~~by~~ with an automatic fire sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and, in addition, one of the following is provided:
   - 2.1. Elevators are accessed from a lobby large enough to accommodate an accessible wheelchair space and separated from the remainder of the building by a smoke partition constructed in accordance with Section 710; or
   - 2.2. An exit stairway in accordance with 1007.3; or
   - 2.3. The building is equipped throughout with a smoke control system in accordance with Section 909.

Commenter's Reason: For the reasons stated in the Utah Chapter of ICC's request for "disapproval" of this item, we believe an "approval as submitted" is a major step backward in our ability to adequately provide emergency egress for our physically impaired population. It is obvious, the physically disabled are simply less able to effect a timely self evacuation than the majority of the population.

We acknowledge the current code language presents some practical difficulties in achieving compliance, but do not support E25's proposed all or nothing approach. The above modification offers a compromise solution by proposing several options to eliminate the requirement for a full area of refuge in fire sprinklered buildings while increasing the opportunity for rescue assistance.

We have presented three basic options to provide an increased level of protection during the time the disabled are awaiting rescue assistance in fire sprinklered buildings:

1. Enlarged landings at stairs in vertical exit enclosures; or
2. Smoke protected elevators lobbies; or a
3. Smoke control system

We believe this amendment recognizes the inherent safety of fire sprinklered buildings while providing a flexible method to achieve a more equitable level of protection for the disabled.

Public Comment 2:

Roger Evans, Park City Municipal Corporation, representing Utah Chapter ICC, requests Disapproval.

Commenter's Reason: Reasons given by the proponent to take this step backwards do not address current realities. Data cited is not reflective of buildings constructed under the current accessibility requirements of the IBC. Since passage of the ADA and increasing adoptions of the IBC, buildings are becoming more and more accessible to a greater population of the physically impaired. With medical advances, a burgeoning aging population, and buildings more accessible, we will continue to see an increasing number of impaired individuals using a variety of buildings in the future. With the benefit of greater access comes the obligation to provide better emergency egress.

In the last cycle the ICC voting members recognized that merely providing fire sprinklers did not address the current and future need and voted by more than a 2/3 majority to eliminate the two exceptions which are here proposed to be reinstated. If we follow the proponent's argument, we might as well eliminate most exit stairways in fire sprinklers buildings. Yes, fire sprinklers make a building safer or all the occupants, but they certainly do not provide an equivalent level of safety for our disabled and aging.

Public Comment 3:

Jason Thompson, National Concrete Masonry Association (NCMA) representing Masonry Alliance for Codes and Standards (MACS), requests Disapproval.

Commenter's Reason: The Masonry Alliance for Codes and Standards (MACS) is requesting the ICC voting membership to disapprove this code change proposal. It has been recommended for approval to allow for an automatic sprinkler system trade-off that deletes the area of refuge and the requirement that accessible elevators be accessed from an area of refuge or a horizontal exit when the building is sprinklered with either an NFPA 13 or NFPA 13R sprinkler system. It should be noted that this very automatic sprinkler system trade-off was deleted during the ICC Final Action Hearings held in Detroit last code cycle. In fact, the membership overwhelmingly approved the code change proposal that deleted the sprinkler trade-off which required a two-thirds majority vote.

We are especially concerned that the proposed reasons for reinstating the sprinkler trade-off are based on the fact that an "operational" automatic sprinkler system would be provided. That assumes the sprinkler system will be operational and effectively function 100% of the time. That is entirely unrealistic. Please note that these accessible means of egress and areas of refuge are intended to protect occupants with disabilities until such time as they can be safely evacuated from the building by emergency responders.

The proponent states that sprinklers operate successfully 93% of the time for those fires in sprinklered buildings where the fire was judged large enough to have activated the sprinkler system. However, a more recent analysis of the sprinkler statistics compiled by the National Fire Protection Association (NFPA) as documented in a report by William E. Koffel, P.E. of Koffel Associates dated January 2006 and subsequently verified by Dr. John Hall of NFPA indicates that the overall operational reliability of automatic sprinkler systems based on the most recent data is 89%. This reflects a difference of the sprinkler system failing in one fire in every nine fires based on an 89% reliability factor versus one fire in every fourteen fires based on a 93% reliability factor. This is a significant difference (750%) and should seriously be considered when determining whether to allow such a sprinkler exception for the protection of occupants with disabilities.

We believe the best protection for disabled occupants in buildings can be provided by the combination of an automatic sprinkler system and built-in passive fire-resistive protection in the form of areas of refuge. We don't believe that areas of refuge and accessible elevators with elevator lobbies should be traded off for automatic sprinklers. It should also be noted that this trade-off would apply to buildings of any height including high-rise buildings and super high-rise buildings (those greater than 420 feet in height). Is that a reasonable sprinkler trade-off for the protection of occupants with disabilities? We don't think so. So we urge the ICC voting membership to overturn the Committee recommendation for approval and disapprove this code change.

Public Comment 4:

Curt Wiehle, Minnesota Building Codes and Standards, requests Disapproval.

Commenter's Reason: Evacuating a building during an emergency is a stressful and confusing time. A sense of uncertainty and anxiety exists no matter what the cause of the evacuation. The presence of a sprinkler system will provide little calming affect for someone who has been left behind with no defined course of action. People with disabilities who are unable to evacuate independently need and deserve a specified place to wait for assistance. The area of refuge is the only solace these individuals have during the chaos while those around them flee the site. What is a person who is unable to evacuate expected to do without a defined area to wait for assistance? How are rescue personnel supposed to find these individuals without a defined location to go to?

This code requires and regulates means of egress in buildings provided with a sprinkler system. The requirement to provide a means of egress is not exempted simply because the building has a sprinkler system. It is expected that people will evacuate in an emergency even when the building has a sprinkler system. What statement is this code making when it provides for the majority but, with this proposal, deliberately and purposefully ignores the most vulnerable occupants of the building?

The committee reason statement indicates that there are conflicts in the current language with elevator protection provisions and smoke barrier construction. Those issues should be dealt with directly, not by taking away the only sense of security provided for persons with disabilities.

The fact that "there has been no loss of life" is a hollow statement when you or your loved one are left behind with no options whatsoever.

In the last code cycle, the voting members, through floor action, recognized the discriminatory nature of this provision and established criteria for persons with disabilities. It was the correct action then, and it is the just action now.

Final Action: AS AM AMPC ____ D

E29-06/07
1007.3 (IFC [B] 1007.3)

Proposed Change as Submitted:

Proponent: Ron Nickson, National Multi Housing Council/National Apartment Association

Revise as follows:

1007.3 Exit stairways. In order to be considered part of an accessible means of egress, an exit stairway shall have a clear width of 48 inches (1219 mm) minimum between handrails and shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from either an area of refuge complying with Section 1007.6 or a horizontal exit.

Exceptions:

1. Unenclosed exit stairways as permitted by Section 1020.1 are permitted to be considered part of an accessible means of egress.
2. The area of refuge is not required at unenclosed exit stairways as permitted by Section 1020.1 in buildings or facilities that are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
3. The clear width of 48 inches (1219 mm) between handrails is not required at exit stairways in buildings or facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
4. The clear width of 48 inches (1219 mm) between handrails is not required for exit stairways accessed from a horizontal exit.
5. Areas of refuge are not required at exit stairways serving open parking garages.
6. The areas of refuge are not required in Group R-2 occupancies.

Reason: To allow an exception to not require an area of refuge in apartment buildings and individual dwellings because the individual sprinklered apartment provide a much superior area to protect the apartment occupant than would be provided by the area of refuge. In addition to each individual unit being surrounded by partitions and horizontal assemblies in accordance with Section 419, the unit also has the special items necessary for the individual occupant.

NFPA fire data from *U.S. Experience with Sprinklers* by Kimberly Rohr and John R. Hall, Jr., December 2005 (copy attached) supports the safety of the individual apartment. According to the report 95% (Table 12, page 46) of the fires in sprinklered apartment buildings are confined within the room of origin (object of origin – 69%, area of origin – 20%, and room of origin – 6%). More important the report goes on to address the effectiveness of sprinklers in saving lives by stating "NFPA has no record of a fire killing more than two people in a completely sprinklered public assembly, educational, institutional, or residential building where the system was properly operating" (Page 32). NFPA also reports that residential sprinkler system reliability of 98% (2% failure, Table 4, page 17) is the highest for all occupancies. The Operation Life Safety reported on the safety of residential systems also shows that the systems save lives. An evaluation of the report *Residential Sprinkler Activations* (copy attached) shows no deaths in buildings protected with the NFPA 13D and 13R sprinkler systems?

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

Committee Action: **Approved as Submitted**

Committee Reason: Since Group R-2 occupancies are required to be sprinklered and separated, there is sufficient protection for the residents. There was a question if with the committee action on E25-06/07 that this exception may be redundant.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Jason Thompson, P.E., National Concrete Masonry Association (NCMA), representing Masonry Alliance for Codes and Standards (MACS), requests Disapproval.

Commenter's Reason: The Masonry Alliance for Codes and Standards (MACS) requests that this code change proposal be disapproved. If not, it would allow for the omission of the areas of refuge in all Group R-2 (apartments) occupancies which are provided as part of the accessible means of egress. This would also include boarding houses, convents, dormitories, fraternities and sororities, hotels and motels (nontransient), monasteries, and vacation time-share properties. Basically we have two concerns. One, unless standard evacuation procedures during fires are modified to instruct the occupants to remain in their units, then it is necessary to provide for these accessible means of egress and areas of refuge to accommodate the occupants who end up evacuating their units during a fire emergency. Two, many of these types of Group R-2 occupancies have ancillary spaces where people congregate outside of the living units and they, too, may need accessible means of egress including areas of refuge where they can await for rescue assistance during such an emergency. Therefore, we believe this code change proposal should be disapproved by the ICC voting membership.

Final Action: AS AM AMPC ____ D

E32-06/07
1007.6, 1007.6.2 (IFC [B] 1007.6, [B] 1007.6.2)

Proposed Change as Submitted:

Proponent: Lawrence G. Perry, AIA, representing BOMA

Revise as follows:

1007.6 Areas of refuge. Every required area of refuge shall be accessible from the space it serves by an accessible means of egress. The maximum travel distance from any accessible space to an area of refuge shall not exceed the travel distance permitted for the occupancy in accordance with Section 1016.1. Every required area of refuge shall have direct access to an enclosed stairway complying with Sections 1007.3 and 1020.1 or an elevator complying with Section 1007.4. Where an elevator lobby is used as an area of refuge, the lobby shall be seperated in accordance with Section 707.14.1. ~~the shaft and lobby shall comply with Section 1020.1.7 for smokeproof enclosures except where the elevators are in an area of refuge formed by a horizontal exit or smoke barrier.~~

1007.6.2 Separation. Each area of refuge serving an enclosed exit stairway shall be separated from the remainder of the story by a smoke barrier complying with Section 709 or a horizontal exit complying with Section 1022. Each area of refuge shall be designed to minimize the intrusion of smoke.

Exception: Areas of refuge located within a vertical exit enclosure.

Reason: This proposal removes the inconsistency between the current area of refuge (elevator) provisions and the separate elevator lobby requirements of Section 707.14.1.

The elevator lobby provisions in Section 707.14.1 provide incremental enclosure requirements, depending on whether the building is sprinklered and the height of the building.

The current provisions of Section 1007.6 conflict with the elevator lobby provisions; both sections are the result of successful floor actions at Final Hearings, and have not been coordinated.

The proposed revisions will utilize Section 707.14 elevator lobby provisions to establish the enclosure requirements for elevator lobbies serving as areas of refuge, while maintaining the separate requirement (of Section 1007.6.3) for a two-way communication system.

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

Committee Action: **Approved as Submitted**

Committee Reason: The proposal will coordinate the requirements between the elevator lobby provisions and those for accessible means of egress.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Laura Blaul and Lorin Neyer, Orange County Fire Authority/California Office of Statewide Health Planning & Development, representing California Fire Chief's Association, requests Disapproval.

Commenter's Reason: We strongly recommend that this Code Change Proposal be disapproved by the ICC voting membership. This Code Change Proposal significantly reduces the level of fire/life safety provided for areas of refuge used as part of the accessible means of egress for physically disabled persons. However, the Committee's reason for approving this Code Change Proposal as submitted was that "The proposal will coordinate the requirements between the elevator lobby provisions and those for accessible means of egress." But elevator lobbies required under Section 707.14.1 perform a completely different function than the area of refuge which must comply with smokeproof enclosures in Section 1020.1.7. The main function of the elevator lobbies is to minimize or prevent the spread of smoke from floor to floor via the elevator shafts which have very loose fitting and leaky fire doors protecting the elevator doorway openings at each floor level. On the other hand, the area of refuge, when provided at an elevator lobby area, is required to meet the criteria for smokeproof enclosures. They are intended to provide an environment which is relatively smoke free in which the physically disabled persons utilizing the area of refuge during a fire emergency can remain until they can be safely evacuated from the building. This function requires a greater level of fire-resistive fire protection, as well as smoke protection, than that required for elevator lobbies.

For example, the smokeproof enclosure requirements specify that the vestibule that forms the elevator lobby for the area of refuge be required to have a minimum 2-hour fire-resistance rating and be constructed as a fire barrier. The doors opening into this area of refuge from any occupied areas would require a 1 ½ - hour fire protection rating. Also, the vestibule/elevator lobby requires significant ventilation that prevents the accumulation of smoke.

The requirements for elevator lobbies, however, specify that the lobby enclosure need only be a fire partition having a fire-resistance rating equal to the corridor. At best, this would be a 1-hour fire-resistance rating. In buildings that are sprinklered, corridors in almost all occupancies would not be required to have a fire-resistance rating. Furthermore, there are six exceptions to the elevator lobby enclosure requirement and a new Exception 5 has been recommended for approval as part of Code Change Proposal FS54-06/07. This code change will allow the elevator lobby to be omitted in high-rise Group B buildings. Current Exception 4 allows for the elimination of elevator lobbies in sprinklered buildings that are not considered high-rise buildings. Exception 5 will allow the use of a smoke partition in lieu of a fire partition when the building is sprinklered. It should be noted that smoke partitions do not require closers on the doors and duct penetrations are not required to be protected with fire and/or smoke dampers. Also, smoke partitions are not required to have a fire-resistance rating. And, finally, Exception 6 allows for the omission of the elevator lobby enclosure if the elevator shaft is pressurized.

Currently, Section 1007.6 will allow the omission of the special elevator lobby requirements meeting those for smokeproof enclosures where the elevators are located in an area of refuge formed by a horizontal exit or a smoke barrier. A horizontal exit is required to have a minimum 2-hour fire-resistance rating with all openings protected with 1 ½ -hour fire doors and fire dampers. Smoke barriers are required to have a minimum 1-hour fire-resistance rating with door openings protected with 20 minute smoke and draft control door assemblies and any duct openings protected with combination fire and smoke dampers.

Thus, it is readily obvious that substituting the elevator lobby protection in Section 707.14.1 will provide inferior, if not inadequate, fire and life safety protection for areas of refuge for physically handicapped individuals required to have accessible means of egress by this section of the code. Therefore, this Code Change Proposal should be disapproved.

Public Comment 2:

Jason Thompson, National Concrete Masonry Association (NCMA), representing Masonry Alliance for Codes and Standards (MACS), requests Disapproval.

Commenter's Reason: This code change proposal needs to be disapproved since it significantly reduces the fire-resistive protection provided for the elevator lobby when it is used as an area of refuge as part of an accessible means of egress to serve occupants with disabilities. In effect, this code change proposal reduces the required fire-resistance rating for the elevator lobby from 2-hours to no fire-resistance rating in most occupancies protected with an automatic sprinkler system. That is because the elevator lobby separation specified in accordance with Section 707.14.1 need only have the required fire- resistance rating as specified for corridors. The corridor rating is allowed to be omitted in most sprinklered occupancies in accordance with Table 1017.1 for other than H, I-2, and I-4 occupancies and for R occupancies which are allowed to have a ½-hour fire-resistance rating. Furthermore, Exception 5 to Section 707.14.1 would allow a smoke partition to be used in lieu of a fire partition to separate the elevator lobby where the building is protected with an automatic sprinkler system in accordance with NFPA 13 or NFPA 13R. Smoke partitions are not required to have a 1-hour fire-resistance rating. And doors in smoke partitions are not required to be self-closing or automatic closing nor are smoke dampers required in duct penetrations of smoke partitions. So the overall level of fire and life safety provided for the elevator lobby enclosure used as an area of refuge under this code change proposal would be significantly reduced and place the occupants with disabilities utilizing these areas of refuge at more risk than they would be if the lobby complied with the requirements for smokeproof enclosures in accordance with Section 1020.1.7.

Therefore, this code change proposal should be disapproved.

Final Action: AS AM AMPC ____ D

E39-06/07

1008.1.1, 1008.1.4, 1008.1.5, 1008.1.5.1 (New), 1008.1.6, 1008.1.7, 1008.1.8, 1003.5 (IFC [B] 1008.1.1, [B] 1008.1.4, [B] 1008.1.5, [B] 1008.1.5.1 (New), [B] 1008.1.6, [B] 1008.1.7, [B] 1008.1.8, [B] 1003.5)

Proposed Change as Submitted:

Proponent: Bill Conner, Bill Conner Associates LLC, representing himself

1. Revise as follows:

1008.1.1 Size of doors. The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear width of ~~not less than~~ 32 inches (813 mm). Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 32 inches (813 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in a Group I-2 occupancy used for the movement of beds shall provide a minimum clear width of ~~not less than~~ 41.5 inches (1054 mm). The height of doors shall not be less than 80 inches (2032 mm).

Exceptions: Other than along accessible routes required by Section 1007 and Chapter 11, the following exceptions are permitted:

1. In Group R-2 and R-3 occupancies, at ~~the minimum and maximum width shall not apply to~~ door openings that are not part of the required means of egress ~~in Group R-2 and R-3 occupancies~~ , the width of door leafs shall not be limited.
2. In Group I-3 occupancies, door openings to resident sleeping units ~~in Group I-3 occupancies~~ shall have a minimum clear width of ~~not less than~~ 28 inches (711 mm).
3. At storage closets less than 10 square feet (0.93 m^2) in area, door openings ~~to storage closets less than 10 square feet (0.93 m^2) in area~~ shall not be limited by the minimum width.
4. At revolving doors that comply with Section 1008.1.3.1, the width of door leafs ~~in revolving doors that comply with Section 1008.1.3.1~~ shall not be limited.
5. Within a dwelling unit or sleeping unit, door openings ~~within a dwelling unit or sleeping unit~~ shall not be less than 78 inches (1981 mm) in height.
6. At dwelling unit or sleeping unit, the exterior door openings ~~in dwelling units and sleeping units~~, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.
7. In Groups I-1, and R-2 and R-3 occupancies, ~~In other than Group R-1 occupancies, the minimum widths shall not apply to~~ interior egress doors within a dwelling unit or sleeping unit ~~that is not required to be an Accessible unit, Type A unit or Type B unit.~~ shall not be limited by the minimum width.
8. ~~Door openings required to be accessible within Type B units shall have a minimum clear width of 31.75 inches (806 mm).~~

The size of doors within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A and Type B units shall comply with ICC A117.1, Chapter 10.

1008.1.4 Floor elevation. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope).

Exceptions: Other than at doors that are along an accessible route required by Section 1007 and Chapter 11:

1. Doors serving individual dwelling units in Groups R-2 and R-3 where the following apply:
   1.1. A door is permitted to open at the top step of an interior flight of stairs, provided the door does not swing over the top step.
   1.2. Screen doors and storm doors are permitted to swing over stairs or landings.
2. Exterior doors as provided for in Section 1003.5, Exception 1, and Section 1018.2, ~~which are not on an accessible route~~.
3. In Group R-3 occupancies ~~not required to be Accessible units, Type A units or Type B units~~, the landing at an exterior doorway shall not be more than 7.75 inches (197 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door, does not swing over the landing.
4. Variations in elevation due to differences in finish materials, but not more than 0.5 inch (12.7 mm).
5. ~~Exterior decks, patios or balconies that are part of Type B dwelling units, have impervious surfaces and that are not more than 4 inches (102 mm) below the finished floor level of the adjacent interior space of the dwelling unit.~~

The floor elevation or landings at doors within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A and Type B units shall comply with ICC A117.1, Chapter 10.

1008.1.5 Landings at doors. Landings shall have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches (178 mm). When a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing to less than one-half its required width. Landings shall have a length measured in the direction of travel of not less than 44 inches (1118 mm).

Exception: Other than at dwelling units and sleeping units required by Section 1107 to be Accessible, Type A or Type B units landing length in the direction of travel in Groups R-3 and U and within individual units of Group R-2 need not exceed 36 inches (914 mm).

2. Add new text as follows:

1008.1.5.1 Doors along accessible routes. For doors along an accessible route required by Section 1007 and Chapter 11, the minimum landing size shall comply with the maneuvering clearances in ICC A117.1, Chapter 4. Within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A or Type B units, the landings at doors shall comply with ICC A117.1, Chapter 10.

3. Revise as follows:

1008.1.6 Thresholds. Thresholds at doorways shall not exceed 0.75 inch (19.1 mm) in height for sliding doors serving dwelling or sleeping units or 0.5 inch (12.7 mm) for other doors. Raised thresholds and floor level changes greater than 0.25 inch (6.4 mm) at doorways shall be beveled with a slope not greater than one unit vertical in two units horizontal (50-percent slope).

Exception: The threshold height shall be limited to 7.75 inches (197 mm) where the occupancy is Group R-2 or R-3; the door is an exterior door that is not a component of the required means of egress; and the door, other than an exterior storm or screen door does not swing over the landing or step; and the doorway is not on an accessible route as required by Chapter 11 and is not part of an Accessible unit, Type A unit or Type B unit.

1008.1.7 Door arrangement. Space between two doors in a series shall be 48 inches (1219 mm) minimum plus the width of a door swinging into the space. Doors in a series shall swing either in the same direction or away from the space between the doors.

Exceptions:

1. The minimum distance between horizontal sliding power-operated doors in a series shall be 48 inches (1219 mm).
2. In Group R, storm and screen doors serving individual dwelling or sleeping units in Groups R-2 and R-3 need not be spaced 48 inches (1219 mm) from the other door.
3. In Groups R-2 and R-3, doors within individual dwelling or sleeping units need not be spaced 48 inches (1219 mm) from the other door in Groups R-2 and R-3 other than within Type A dwelling units.

In Group R occupancies, at doors serving and doors within Accessible and Type A dwelling and sleeping units required by Section 1107, door arrangement shall comply with ICC A117.1 Chapter 10.

Exception: Storm and screen doors serving individual dwelling or sleeping units need not be spaced 48 inches (1219 mm) from the other door.

4. Delete without substitution:

1008.1.8 Hardware. Door handles, pulls, latches, locks and other operating devices on doors required to be accessible by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.

5. Revise as follows:

1003.5 Elevation change. Where changes in elevation of less than 12 inches (305 mm) exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1010 shall be used. Where the difference in elevation is 6 inches (152 mm) or less, the ramp shall be equipped with either handrails or floor finish materials that contrast with adjacent floor finish materials.

Exceptions: Other than along accessible routes required by Section 1007 and Chapter 11, the following exceptions are permitted:

1. A single step with a maximum riser height of 7 inches (178 mm) is permitted at exterior doors for buildings with occupancies in Groups F, H, R-2, R-3, S and U at exterior doors not required to be accessible by Chapter 11.
2. A stair with a single riser or with two risers and a tread is permitted at locations not required to be accessible by Chapter 11, provided that the risers and treads comply with Section 1009.3, the minimum depth of the tread is 13 inches (330 mm) and at least one handrail complying with Section 1012 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the stair.
3. A step is permitted in aisles serving seating that has a difference in elevation less than 12 inches (305 mm) at locations not required to be accessible by Chapter 11, provided that the risers and treads comply with Section 1025.11 and the aisle is provided with a handrail complying with Section 1025.13.

Any change in elevation in a corridor serving nonambulatory persons in a Group I-2 occupancy shall be by means of a ramp or sloped walkway. The elevation change in the means of egress within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A and Type B units shall comply with ICC A117.1, Chapter 10.

Reason: The intent of this proposal is to required doors along accessible routes required for ingress (Chapter 11) or egress (Section 1007) to meet the provisions for accessible doorways in ICC A117.1. A general reference to ICC A117.1 for doorways would not be sufficient, since there are safety concerns for means of egress doors that may or may not be consistent with the accessibility provisions in ICC A117.1 (e.g. direction of door swing is a means of egress issue that is not addressed in the ICC A117.1). When the requirements are consistent (e.g. thresholds) a reference is not required. The exception in Section 1008.1.6 is deleted because it is already in Section 1008.1.4, as well at not being permitted in Accessible, Type A and Type B units. Section 1008.1.8 is deleted since it is already covered in ICC A117.1 for doors that are part of an accessible route and is therefore redundant text. If Section 1008.1.8 should be applicable to all doors, "required to be accessible by Chapter 11" should be struck.

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

Committee Action: **Disapproved**

Committee Reason: The revision to Section 1008.1.1 Exception 7 deletes the allowances for Group R-4 to use this exception. Deletion of the exception to Section 1008.1.6 allowing a 7.75 inch threshold would effectively eliminate the use of sliding glass doors. This goes beyond editorial as indicated in the reason

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Replace proposal with the following:

1008.1.6 Thresholds. Thresholds at doorways shall not exceed 0.75 inch (19.1 mm) in height for sliding doors serving dwelling or sleeping units or 0.5 inch (12.7 mm) for other doors. Raised thresholds and floor level changes greater than 0.25 inch (6.4 mm) at doorways shall be beveled with a slope not greater than one unit vertical in two units horizontal (50 percent slope).

~~**Exception**: The threshold height shall be limited to 7.75 inches (197 mm) where the occupancy is Group R2 or R3: the door is an exterior door that is not a component of the required means of egress; and the door, other than an exterior storm or screen door does not swing over the landing or step; and the doorway is not on an accessible route as required by Chapter 11 and is not part of an Accessible unit, Type A or Type B unit.~~

Commenter's Reason: Two proposals have been submitted to split the question and address the two different concerns brought forward in the public testimony at the last hearings. The proposal to Section 1008.1.6 was not intended to prohibit sliding glass doors. The proposal to strike the threshold exception was to eliminate duplicate language from Section 1008.1.4.

Public Comment 2:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Replace proposal with the following:

1008.1.1 Size of doors. The minimum width of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear width of ~~not less than~~ 32 inches (813 mm). Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a clear opening width of 32 inches (813 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. Means of egress doors in a Group I-2 occupancy used for the movement of beds shall provide a minimum clear width of ~~not less than~~ 41.5 inches (1054 mm). The height of doors shall not be less than 80 inches (2032 mm).

Exceptions: Other than along accessible routes required by Section 1007 and Chapter 11, the following exceptions are permitted:

1. In Group R-2 and R-3 occupancies, at ~~the minimum and maximum width shall not apply to~~ door openings that are not part of the required means of egress ~~in Group R-2 and R-3 occupancies~~ , the width of door leafs shall not be limited.
2. In Group I-3 occupancies, door openings to resident sleeping units ~~in Group I-3 occupancies~~ shall have a minimum clear width of ~~not less than~~ 28 inches (711 mm).
3. At storage closets less than 10 square feet (0.93 m^2) in area, door openings ~~to storage closets less than 10 square feet (0.93 m^2) in area~~ shall not be limited by the minimum width.

4. At revolving doors that comply with Section 1008.1.3.1, the width of door leafs ~~in revolving doors that comply with Section 1008.1.3.1~~ shall not be limited.
5. Within a dwelling unit or sleeping unit, door openings ~~within a dwelling unit or sleeping unit~~ shall not be less than 78 inches (1981 mm) in height.
6. At dwelling unit or sleeping unit, the exterior door openings ~~in dwelling units and sleeping units~~, other than the required exit door, shall not be less than 76 inches (1930 mm) in height.
7. In Groups I-1, and R-2 and R-3 occupancies, ~~In other than Group R-1 occupancies, the minimum widths shall not apply to~~ interior egress doors within a dwelling unit or sleeping unit ~~that is not required to be an Accessible unit, Type A unit or Type B unit.~~ shall not be limited by the minimum width.
8. ~~Door openings required to be accessible within Type B units shall have a minimum clear width of 31.75 inches (806 mm).~~

The size of doors within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A and Type B units shall comply with ICC A117.1, Chapter 10.

1008.1.4 Floor elevation. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope).

Exceptions: Other than at doors that are along an accessible route required by Section 1007 and Chapter 11:

1. Doors serving individual dwelling units in Groups R-2 and R-3 where the following apply:
   1.1. A door is permitted to open at the top step of an interior flight of stairs, provided the door does not swing over the top step.
   1.2. Screen doors and storm doors are permitted to swing over stairs or landings.
2. Exterior doors as provided for in Section 1003.5, Exception 1, and Section 1018.2, ~~which are not on an accessible route~~.
3. In Group R-3 occupancies ~~not required to be Accessible units, Type A units or Type B units~~, the landing at an exterior doorway shall not be more than 7.75 inches (197 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door, does not swing over the landing.
4. Variations in elevation due to differences in finish materials, but not more than 0.5 inch (12.7 mm).
5. ~~Exterior decks, patios or balconies that are part of Type B dwelling units, have impervious surfaces and that are not more than 4 inches (102 mm) below the finished floor level of the adjacent interior space of the dwelling unit.~~

The floor elevation or landings at doors within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A and Type B units shall comply with ICC A117.1, Chapter 10.

1008.1.5 Landings at doors. Landings shall have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches (178 mm). When a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing to less than one-half its required width. Landings shall have a length measured in the direction of travel of not less than 44 inches (1118 mm).

Exception: Other than at dwelling units and sleeping units required by Section 1107 to be Accessible, Type A or Type B units landing length in the direction of travel in Groups R-3 and U and within individual units of Group R-2 need not exceed 36 inches (914 mm).

1008.1.5.1 Doors along accessible routes. For doors along an accessible route required by Section 1007 and Chapter 11, the minimum landing size shall comply with the maneuvering clearances in ICC A117.1, Chapter 4. Within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A or Type B units, the landings at doors shall comply with ICC A117.1, Chapter 10.

1008.1.7 Door arrangement. Space between two doors in a series shall be 48 inches (1219 mm) minimum plus the width of a door swinging into the space. Doors in a series shall swing either in the same direction or away from the space between the doors.

Exceptions:

1. The minimum distance between horizontal sliding power-operated doors in a series shall be 48 inches (1219 mm).
2. In Group R, storm and screen doors serving individual dwelling or sleeping units ~~in Groups R-2 and R-3~~ need not be spaced 48 inches (1219 mm) from the other door.
3. In Groups R-2 and R-3, doors within individual dwelling or sleeping units need not be spaced 48 inches (1219 mm) from the other door ~~in Groups R-2 and R-3 other than within Type A dwelling units~~.

In Group R occupancies, at doors serving and doors within Accessible and Type A dwelling and sleeping units required by Section 1107, door arrangement shall comply with ICC A117.1 Chapter 10.

Exception: Storm and screen doors serving individual dwelling or sleeping units need not be spaced 48 inches (1219 mm) from the other door.

~~**1008.1.8 Hardware.** Door handles, pulls, latches, locks and other operating devices on doors required to be accessible by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.~~

1003.5 Elevation change. Where changes in elevation of less than 12 inches (305 mm) exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1010 shall be used. Where the difference in elevation is 6 inches (152 mm) or less, the ramp shall be equipped with either handrails or floor finish materials that contrast with adjacent floor finish materials.

Exceptions: Other than along accessible routes required by Section 1007 and Chapter 11, the following exceptions are permitted:

1. A single step with a maximum riser height of 7 inches (178 mm) is permitted at exterior doors for buildings with occupancies in Groups F, H, R-2, R-3, S and U ~~at exterior doors not required to be accessible by Chapter 11~~.

2. A stair with a single riser or with two risers and a tread is permitted ~~at locations not required to be accessible by Chapter 11~~, provided that the risers and treads comply with Section 1009.3, the minimum depth of the tread is 13 inches (330 mm) and at least one handrail complying with Section 1012 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the stair.
3. A step is permitted in aisles serving seating that has a difference in elevation less than 12 inches (305 mm) ~~at locations not required to be accessible by Chapter 11~~, provided that the risers and treads comply with Section 1025.11 and the aisle is provided with a handrail complying with Section 1025.13.

Any change in elevation in a corridor serving nonambulatory persons in a Group I-2 occupancy shall be by means of a ramp or sloped walkway. The elevation change in the means of egress within dwelling units or sleeping units required by Section 1107 to be Accessible, Type A and Type B units shall comply with ICC A117.1, Chapter 10.

Commenter's Reason: Two proposals have been submitted to split the question and address the two different concerns brought forward in the public testimony at the last hearings. No additonal changes are proposed to the original proposal. The committee reason was based on testimony that was incorrect. Group R-4 need not be stated unless you want a requirement different than Group R-3 (see 310.1 under R-4). These revisions will clarify when accessibility requirements would be more restrictive than what is permitted in the general exceptions.

Final Action: AS AM AMPC ____ D

E41-06/07
1008.1.2 (IFC [B] 1008.1.2)

Proposed Change as Submitted:

Proponent: John Neff, Washington State Building Code Council

Revise as follows:

1008.1.2 Door swing. Egress doors shall be side-hinged swinging.

Exceptions:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
5. In other than Group H occupancies, revolving doors complying with Section 1008.1.3.1.
6. In other than Group H occupancies, horizontal sliding doors complying with Section 1008.1.3.3 are permitted in a means of egress.
7. Power-operated doors in accordance with Section 1008.1.3.2.
8. Doors serving a bathroom within an individual sleeping unit in Group R-1.
9. In other than Group H Occupancies, manually operated horizontal sliding doors are permitted in a means of egress from spaces with an occupant load of 10 or less.

Doors shall swing in the direction of egress travel where serving an occupant load of 50 or more persons or a Group H occupancy.

The opening force for interior side-swinging doors without closers shall not exceed a 5-pound (22 N) force. For other side-swinging, sliding and folding doors, the door latch shall release when subjected to a 15-pound (67 N) force. The door shall be set in motion when subjected to a 30-pound (133 N) force. The door shall swing to a full-open position when subjected to a 15 pound (67 N) force. Forces shall be applied to the latch side.

Reason: The purpose of the code change is to add an exception to the code to allow a specific type of door for egress from areas of low occupancy. This exception is needed to allow space efficient design while maintaining a proven level of safety. Use of manual horizontal sliding doors for egress from low occupancy spaces was allowed under legacy codes with no impact on the health and safety of the occupants. Examples of where these doors have been used for egress include hotel balconies and in teacher break rooms in school facilities.

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

Committee Action: **Approved as Modified**

Modify proposal as follows:

1008.1.2 Door swing. Egress doors shall be side-hinged swinging.

Exceptions:

~~1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.~~
~~9~~ 1. In other than Group H Occupancies, manually operated horizontal sliding doors are permitted in a means of egress from spaces with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
5. In other than Group H occupancies, revolving doors complying with Section 1008.1.3.1.
6. In other than Group H occupancies, horizontal sliding doors complying with Section 1008.1.3.3 are permitted in a means of egress.
7. Power-operated doors in accordance with Section 1008.1.3.2.
8. Doors serving a bathroom within an individual sleeping unit in Group R-1.

Doors shall swing in the direction of egress travel where serving an occupant load of 50 or more persons or a Group H occupancy.

The opening force for interior side-swinging doors without closers shall not exceed a 5-pound (22 N) force. For other side-swinging, sliding and folding doors, the door latch shall release when subjected to a 15-pound (67 N) force. The door shall be set in motion when subjected to a 30-pound (133 N) force. The door shall swing to a full-open position when subjected to a 15 pound (67 N) force. Forces shall be applied to the latch side.

Committee Reason: The change allowing for a horizontal sliding door instead of a side swinging door in areas with small occupant loads would not decrease safety for the means of egress. The modification to delete Exception 1 was to eliminate redundant text with the new exception. The Assembly Action was due to the deletion of Exception 1 resulting in overhead doors not being permitted as an option for some of these small areas.

Assembly Action: **Approved as Submitted**

Individual Consideration Agenda

This item is on the agenda for individual consideration because an assembly action was successful.

Final Action: AS AM AMPC ____ D

E48-06/07
1008.1.8.3 (IFC [B] 1008.1.8.3)

Proposed Change as Submitted:

Proponent: Kathy All, South Carolina Health Care Association, representing Nursing Home Facilities

Revise as follows:

1008.1.8.3 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F,Mand S, and in places of religious worship, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
   2.1. The locking device is readily distinguishable as locked,
   2.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background,
   2.3. The use of the key-operated locking device is revokable by the building official for due cause.
3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no doorknob or surface-mounted hardware.

4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool.
5. Door Locking arrangements without delayed egress shall be permitted in I-2 health care occupancies or portions of I-2 health care occupancies where the clinical needs of the patients require specialized security provisions for their safety provided all staff can readily unlock such doors at all times.

Reason: The purpose and subsequent reasons for the proposed code change is the immediate need to clarify the current code. Clarification can be obtained by the addition of the above stated text. Currently International Building Code 1008.1.8.3 (Exception 1) indicates locks and latches shall be permitted to prevent operation of doors where any of the following exists: Places of detention or restraint. The code does not specify the groups that may be affected by exception 1. The code clearly does not indicate the exclusion of Group I-2 (Section 308.3) which includes nursing homes. The absence of a definitive clarification has over years required nursing homes across the country to seek state specific amendments to the code or to rely on the interpretations of the state specific Authority Having Jurisdiction . In all circumstances there is a lack of continuity as to the intent of the code. As a result in many instances the quality of care and the quality of life of seniors throughout the country has a great potential of being compromised. With the national movement for seniors to have the opportunity to age in place, and the increasing utilization of residential and assisted living facilities these individuals are entering the long term care nursing environment at a higher level of acuity. Frequently admission is required based on moderate to extensive cognitive impairment as a result of Alzheimer's disease or other related dementias. Residents with dementia will wander and seek exits and are at high risk for elopement. Although (Exception #1) of section 1008.1.8.3 (Places of Detention and Restraint) may be most common in Group I-3 facilities (Section 308.4) there are clearly areas in Group I-2 where the clinical needs of these patients present legitimate security concerns which require areas of restraint for their safety and wellbeing. Magnetic locks have been historically installed on doors in the means of egress in nursing homes to prevent resident elopement and to provide a safe environment. These locks are now equipped with delayed egress. The locking mechanism however has a code key touch pad that requires a series of numbers to be entered in order for the door to open. The code is also printed and placed beside the door and all staff and visitors have access to the code. This means the staff can readily unlock the doors at all times. These doors also automatically unlock when the automatic fire detection system or the automatic sprinkler system is triggered. Currently Fire and Life safety inspectors interpret 1008.1.8.3 (exception #1) to require delayed egress on magnetic locks. This delayed egress mechanism allows a door to be open when pressed upon for 15 seconds or with permission of the Authority Having Jurisdiction an opening delay of 30 seconds. In effect this requirement of a delayed egress annuls the reason why the doors are secured in the first place. Although the staff are aware of the delayed egress function and all efforts are made to assess and provide divers ional activity to keep residents away from the doors it is impossible to monitor all who are cognitively impaired on a one to one around the clock basis. The patient pushes on these delayed egress doors, the alarm sounds causing the patient to become more confused and often frightened. This cycle is repeated over and over because the cognitively impaired patient cannot discern the alarm as an indication of danger. The staff is at intervals so busy attending to the delayed egress doors precious quality time that could be spent with the residents is lost. To a large degree a significant part of the quality of life for Alzheimer's and other dementia patients is to allow them to freely move about in a safe environment. Where the clinical needs of the resident require it this safe environment can be defined as an area of restraint thereby including Group I-2 under Code 1008.1.8.3 (Exception #1) . The addition of the proposed new text will clarify Area of Restraint and bring consistency to the intent and interpretation of the current code. By including the additional text the International Building Code 1008.1.8.3 will also be consistent with NFPA 101-2000 section 19.2.2.2.4 (exception #1) and 19.2.2.2.5 which indicates delayed egress is not required in facilities where the clinical needs of the patients require specialized security measures for their safety provided that staff can readily unlock the doors at any time.

This proposed code change only clarifies the intent of the existing code. Several technical authorities and regulations support and substantiate the benefits of locking egress doors without time delays, in health care occupancies where the patients have Alzheimer's type dementia and exit seeking predisposition.

The Center for Medicare and Medicaid services has adopted the National Fire Protection Association 101 2000 as it's authoritative text when evaluating a nursing home's compliance with Medicare/Medicaid regulations. The NFPA 101 2000, section 19.2. 2. 2. 4 , exception 1 allows for door locking arrangements, without delayed egress, in health care occupancies where the clinical needs of the patients require security measures. The International Building Code 20003, section 100 19.2.2.2.4, exception 1allows for door locking arrangements , without delayed egress, in healthcare occupancies where the clinical needs of the patients require special security measures.

The HealthCare Interpretations Task Force (H.I.T.F) also substantiates this same benefit. The H.I.T.F. is a coalition of the major organizations that impact the health care community. It was formed in July of 1998 and it's membership includes: American Health Care Association, American Society of Health Care Engineers, Center for Medicare/Medicaid Services, Department of Defense, National Fire Protection Association, and Joint Commission on Accreditation of Hospitals. This coalition meets annually and as part of their duties, interprets questions asked by providers and non-professionals and attempts to reconcile organizational differences of opinion. The minutes of the September 10, 1998 meeting of the H.I.T.F. indicate a question was submitted regarding door locking arrangements. The task force was asked to determine if it was the intent of the Life Safety Code to permit doors in the means of egress of health care facilities to be locked. Provided the clinical needs of the patients require specialized security measures and provided the staff can unlock these doors at all times. The H.I.T.F.'s opinion was that the code did allow such door locking arrangements.

A series of similar questions was again addressed by the H.I.T.F. at their meeting in Reno, NV on November 19, 2003. The question was asked; "Is it the intent of the Code to restrict the type of locking devices to time delayed locks?" and the answer was NO.

We believe the IBC currently allows for the door locking arrangements in I-2 occupancies where the specialized needs of patients who wander, exit seek and elope may require them to be housed in an area of restraint. We are asking for this code change to clarify the existing code.

Bibliography:

IBC 2003 Section 1008.1.8.3 Locks and Latches, #I.
NFPA 101 2000 Section 19.2.2.2.4, exception #1.
Minutes of the September 10, 1998 meeting of the Health Care Interpretation Task Force
Minutes of the November 19, 203 meeting of the Health Care Interpretation Task Force

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

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved in favor of G83 6/07. Additional redundancy is needed for occupant safety in order to warrant the locking of the doors, not just keys. "All staff" could be extended from the janitor to the head nurse.

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 the proposal as follows:

1008.1.8.3 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and in places of religious worship, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
   2.1. The locking device is readily distinguishable as locked,
   2.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background,
   2.3. The use of the key-operated locking device is revokable by the building official for due cause.
3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no doorknob or surface-mounted hardware.
4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool.
5. Door Locking arrangements without delayed egress shall be permitted in ~~I-2 health care~~ occupancies or portions of ~~I-2 health care~~ occupancies where the clinical needs of the patients require specialized security provisions for their safety provided all clinical staff can readily unlock such doors at all times.

Commenter's Reason: The committee deferred this item to G83-06/07 which was subsequently disapproved by that committee. Consequently, there is nothing to address the concerns of clinical locking needs. Other than a preference for G83 one question was raised regarding "staff". With the additional text, staff is now identified as clinical staff as opposed to janitorial staff.

While this is customary usage in many jurisdictions, the specific reference to I-2 needs to be deleted. As written, the proposed code change limits applications to I-2 occupancies and conflicts with Exception No. 1 which permits locking of doors in "places of detention and restraint" without limiting its application to a specific occupancy. Exception No. 1 applies to the locking of doors in detention/correction facilities and in mental hospitals, to name two of the obvious occupancies that require "detention or restraint". While Exception No. 1 should also be applicable to an Alzheimer's unit in a Nursing Home, the difficulty of obtaining AHJ agreement needs to be addressed. However, in doing so, it is important not to create a more restrictive requirement that would serve to limit the application of Exception No. 1.

Therefore, the proposed amendments to E48-06/07 is intended to allow the locking of doors where the clinical needs of the patients require specialized security provisions for their safety provided that all staff can readily unlock such doors at all times in all such occupied areas regardless of the specific occupancy. This would apply to a broad range uses that require restraint of occupants such as an Alzheimer unit in a Nursing Home (I-2), an Alzheimer unit in an Adult Day Care facility (I-4), a mental hospital (I-2), a recreational facility for psychiatric patients (A-3), and an alcohol/drug rehabilitation center (I-1).

Final Action: AS AM AMPC ____ D

E51-06/07
1008.1.8.6.1 (New) [IFC [B] 1008.1.8.6.1 (New)]

Proposed Change as Submitted:

Proponent: Michael G. Kraft, Division of State Fire Marshal, State of Ohio

Add new text as follows:

1008.1.8.6.1 Special security measures in I-2 occupancies. When approved by the fire code official, within a Group I-2 occupancy that is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and an approved smoke detection system installed in accordance with Section 907, spaces

used for patients that require elopement prevention or special security measures shall be permitted to have the egress doors exiting from that space to be equipped with approved, listed egress locks installed in accordance with Section 1008.1.8.6 except that a keypad or similar elopement prevention or security control device may be utilized in lieu of the irreversible process required when a force is applied to the release device indicated in Item 4.

Reason: The reason for this code change is simply to address the plethora of hospital, nursing home, Alzheimer care facilities, and similarly challenged I-2 occupancies that tend to install the magnetic locks on exit doors. Once these issues come before an appeals board, the relief is typically granted as our peers recognize that this "real world" condition needs a proper solution. This situation is pervasive, in that many facilities are struggling to address the growing population of Alzheimer patients. Although the presence of a locking device on an egress door appears counter intuitive to the fire service, it is incumbent upon code officials to recognize when technology and/or real world circumstances necessitate an adjustment in the applicable code requirements.

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

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved in favor of G83-06/07. The provisions are scope to just an I-2 occupancy. There may be other occupancies where this should be permitted.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Michael G. Kraft, Ohio Division of State Fire Marshal, requests Approval as Submitted.

Commenter's Reason: The committee incorrectly disapproved this proposal in favor of G83 by reason of a broader application being required, however, the proponent of G83 specifically addresses in the reason statement elopement of occupants from I-2 facilities. It is only the safety of such infirm patients as found in an I-2 facility that should prompt code officials to permit such locking arrangements on egress doors. Therefore, a broader application of this requirement is not necessary. Moreover, this proposal incorporates the additional safety provided by the required approved smoke detection system and simply utilizes the existing stipulations of Section 1008.1.8.6 instead of creating an unnecessary new list of such stipulations.

Final Action: AS AM AMPC ____ D

E55-06/07

1009.1 (New), 1009.3 [IFC [B] 1009.1 (New), [B] 1009.3]

Proposed Change as Submitted:

Proponent: Bill Conner, Conner Associates LLC, representing himself

1. Add new text as follows:

1009.1 Scope. The provisions of this section shall apply to stairways used as a component of means of egress. Exterior exit stairways shall also comply with Section 1023.

Exception: Existing stairways being altered or replaced shall be permitted to comply with Section 3403.4.

(Renumber subsequent sections)

2. Revise as follows:

1009.3 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm).

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.
3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).
5. ~~See the Section 3403.4 for the replacement of existing stairways.~~

Reason: There is no general scoping section for stairways. Without this language, there has also been the interpretation that exterior exit stairways do not have to comply with the general provisions for stairways in Section 1009, only the specific provisions in Section 1023. The language here is that similar for ramps in Section 1010.1. This would also coordinate better with the provisions in ADAAG 210.1.
Exception 5 is not needed if the general scoping provisions are added.

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

Committee Action: **Disapproved**

Committee Reason: While a scoping section is needed for this section, the proposed language does not clarify if the stairway provisions should be applicable to all stairways, stairways that are part of the means of egress, or just stairways required to serve as part of the means of egress.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Bill Conner, representing himself requests Approval as Submitted.

Commenter's Reason: The committee stated that scoping for stairways were needed. The proposed scoping language for the stairway section is the same as used for ramps in Section 1010. A problem with this language for application to ramps ahs not been identified.

Final Action: AS AM AMPC ____ D

E57-06/07
1009.3, 1009.3.1 (New) [IFC [B] 1009.3 [B] 1009.3.1 (New)]

Proposed Change as Submitted:

Proponent: Bill Conner, Conner Associates LLC, representing himself

1. Revise as follows:

1009.3 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm).

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.

3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope
of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3, and within individual dwelling units in Group R-2, not required to comply with Accessible, Type A or Type B units in accordance with Section 1107.7, shall be permitted comply with the stair tread and riser requirements in accordance with Section 1009.3.1.
4. ~~In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).~~
5. See the Section 3403.4 for the replacement of existing stairways.

2. Add new text as follows:

1009.3.1 Stair tread and rises in Groups R-2, R-3 and U. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).

Reason: Section 1009.3, Exception 4 from Section 1009.3 is moved to new Section 1009.3.1 in order to clarify the residential requirements as well as indicating that the reduction in tread riser ratios are not permitted for stairways that may be in Accessible, Type A or Type B units

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

Committee Action: **Disapproved**

Committee Reason: While the proposal would clarify that Accessible and Type A units should meet 7/11 stairway provisions, Type B units should not have to comply with the 7/11 stairway provisions. A concern was if Type A and Type B unit stairways were covered by the stairway provisions in ICC A117.1.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Modify proposal as follows:

1009.3 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm).

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.
3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3, and within individual dwelling units in Group R-2, not required to comply with Accessible~~,~~ units or Type A ~~or Type B~~ units in accordance with Section 1107.7, shall be permitted comply with the stair tread and riser requirements in accordance with Section 1009.3.1.
5. See the Section 3403.4 for the replacement of existing stairways.

1009.3.1 Stair tread and rises in Groups R-2, R-3 and U. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).

Commenter's Reason: It was indicated during testimony that the Fair Housing Act does not specify requirements for stairways within units, therefore, Type B units could use the 7.75/10 rise/run exception. The 7/11 rise/run would be required in Accessible units and Type A units that included stairways in the floor plan. While stairs are not an accessible route, the configurations of stairways is important for person with other mobility impairments.

Final Action: AS AM AMPC ____ D

E58-06/07, Part I

1009.3, 1009.3.3 (IFC [B] 1009.3, [B] 1009.3.3)

Proposed Change as Submitted:

Proponent: David W. Cooper, Stairway Manufacturers' Association

PART I – IBC

Revise as follows:

1009.3 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the leading edges of adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm).

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.
3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). ~~A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).~~
5. See the Section 3403.4 for the replacement of existing stairways.

1009.3.3 Profile. The radius of curvature at the nosing ~~leading edge~~ shall be not greater than ~~0.5~~ 9/16 inch (14.3~~12.7~~ mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the nosing ~~leading edge~~ under ~~of~~ the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The ~~leading edge (~~nosings~~) of treads~~ shall project not less than ¾ inch (19 mm) but not more than 1.25 inches (32 mm) beyond the tread below and all projections of the nosings in the stairway ~~leading edges~~ shall be of uniform size~~, including the leading edge of the floor at the top of a flight~~.

Exceptions:

1. Solid risers are not required for stairways that are not required to comply with Section 1007.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.

Reason: (IBC) The purpose of the change is for clarification of the code and minor revision of a dimension. The code language can be simplified by using the code defined term **Nosing**. The change of the radius curvature dimension requested from ½" to 9/16" will not affect stair safety and will technically allow compliant use of the industry standard thickness of 1-1/16" for wooden stair treads with a half round nosing.

This change is all about profile, requiring projection, and using defined terms. Because of a reference to nosing projection in one of the exceptions in 1009.3 that section has been included. Suffice it to say that the requirement hidden in the exception is not necessary if our proposed changes to 1009.3.3 are accepted because the requirement will appear where it belongs in the charging paragraph of 1009.3.3.

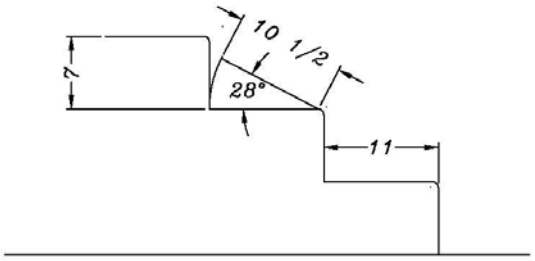
The change in the radius from .5 inch to 9/16 inch permits the currently allowed radius of the half round profile that is used to nose treads that are manufactured to an industry standard thickness of 1-1/16 inch. This minimal change will not affect stair safety as the 9/16 inch radius is currently accepted in field inspections as a nominal variation and would match the dimension used in the IRC as well as the standard to which all wood treads are made.

The text of this section could be less confusing if the code's defined term "nosing" is substituted for "leading edge". The word nosing is used throughout the industry in the daily; manufacture, distribution, sale and installation of treads, landing tread and return nosing mouldings, and stairs. In addition the IBC definition in "**1002.1 NOSING**. The leading edge of treads of stairs and of landings at the top of stairway flights." very simply includes the answer to the questions: "Leading edge of what?", "Does the code mean Nosing?", Is a Nosing different than a leading edge of a tread or leading edge of a stair or leading edge of a landing? This substitution eliminates the need for parentheses and includes in the definition reference to the nosing of landings as well. In this particular code use of the defined term can simplify and eliminate confusing and redundant language that causes people to think that there is a difference between nosing and leading edge.

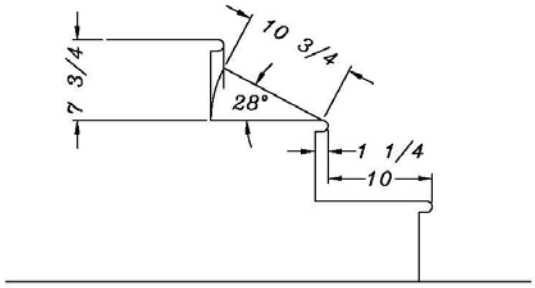
When descending a stair the user places the ball and toes of the foot onto the tread below. From this pivot point the heel then drops in an arc until the foot is balanced on the tread and the weight shift can be completed to swing the other foot to the next tread below. As the heel drops in the arc a nosing projection allows additional clearance for the heel. The same relief can be obtained by sloping the riser under the upper tread. The word "under" is being added to clarify the intent that the riser may be sloped back into the stair as an alternative to the use of a nosing projection that allows heel relief for the descending user. Currently the code is misinterpreted to allow the riser to be sloped out onto the tread below which causes an effective shortening of the tread depth expected by the user. Please see attached graphic illustrating the maximum space available for the heel to arc onto the tread.

In the profile study (graphic) below it is clear to see the advantage of having a nosing projection even on treads as large as 11 inches. If a projection is not used or required the usable tread space in descent is greatly reduced. If you compare the illustration of the 11 inch tread with no projection it has less available foot space than is attained with a 10 inch tread with the required projection. I am sure you have walked on stairs with no nosing projection and wondered why it felt strange. It is because the user experiences a foreshortening of the tread and is not given the heel clearance that he or she is accustomed to related to where they normally place the ball and toes of the feet near the edge of the tread when descending. This is usually noticeable and the user must make the adjustment when no nosing projection is used. Without further study we could not recommend a minimum width that could be used without a nosing projection however requiring nosing projections makes sense. For this reason we have included 1009.3

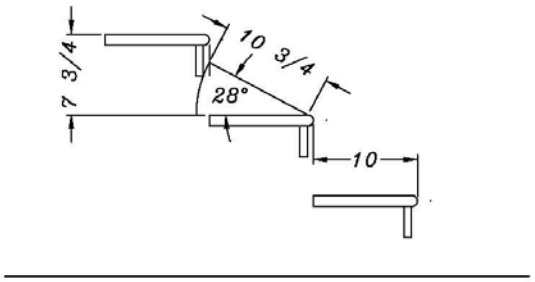
Finally the use of the defined term Stairway further clarifies the codes intent to include nosings at the edges of floors and landings as they are part of a stairway by definition.



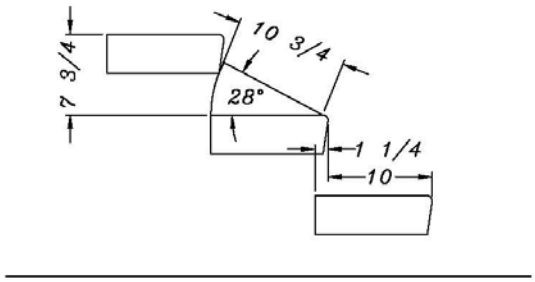
No Nosing Projection - shows that foot space of 11 inch tread depth is less than conventional with only 10 inch tread depth and that a change in rise has no effect on foot space.



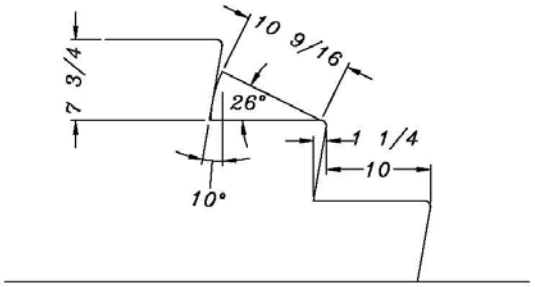
Conventional Construction



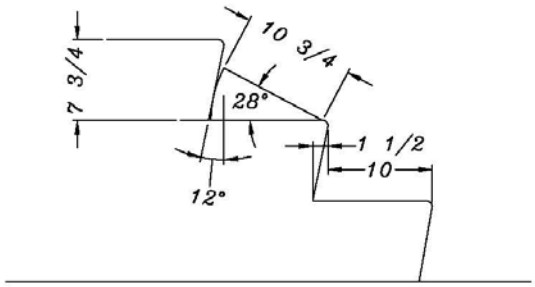
Open Riser Without Projection - shows lack of projection has no effect on foot space if opening limiter is clear of heel arc.



Open Riser With Projection - shows thicker treads required to reduce opening could affect available tread depth



Sloped Riser - shows riser angle at $1\frac{1}{4}$ inch projection has less available foot space than conventional



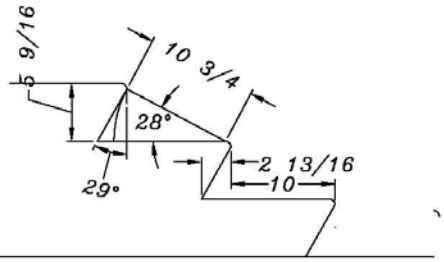
Sloped Riser - shows riser angle and projection required to attain same available foot space as conventional

PROFILE STUDY

Although not all possibilites are illustrated here, the intent is to show several of the factors, controlled by the sections of the ICC codes for **Profile,** related to the need for a nosing projection in the descent of stairways. Although the anatomy of the foot projects the heel from the back of the leg and shoed the projection is appoximately 1 to 2 inches the illustrations are simply a comparison of the maximum available foot space. It is not normal for the heel to be pushed back against the riser in descent.

In each example we have drawn an arc from the restriction of space at the back of the tread to the the intersection of the vertical plane of the nosing.

Each of the diagrams is drawn with the same nosing radius and pivot point at the nosing edge.



Sloped Riser - shows that lower riser heights of stairs with projection could affect available foot space also shows riser angle required to attain foot space of Conventional. For this and other reasons related to propotion it is best to use wider treads with shorter risers.

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

Committee Action: Disapproved

Committee Reason: The term 'leading edge' is not confusing, therefore there is no need to replace is with the term 'nosing.' Technical justification was not provided for the need to revise the profile measurements.

Assembly Action: None

Individual Consideration Agenda

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

Public Comment:

David W. Cooper, Stairway Manufacturers Association, requests Approval as Modified by this public comment for Part I.

Modify proposal as follows:

1009.3 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. Stair tread depths shall be 11 inches (279 mm) minimum. The riser height shall be measured vertically between the nosings ~~leading edges~~ of adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's nosing ~~leading edge~~. Winder treads shall have a minimum tread depth of 11 inches (279 mm) measured at a right angle to the tread's nosing ~~leading edge~~ at a point 12 inches (305 mm) from the side where the treads are narrower and a minimum tread depth of 10 inches (254 mm).

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.
3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).
5. See the Section 3403.4 for the replacement of existing stairways.

1009.3.3 Profile. The radius of curvature at the nosing shall be not greater than 9/16 inch (14.3 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the nosing under the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The nosings shall project not less than ¾ inch (19 mm) but not more than 1.25 inches (32 mm) beyond the tread below and all projections of the nosings in the stairway shall be of uniform size, including the leading edge of the floor at the top of a flight.

Exceptions:

1. Solid risers are not required for stairways that are not required to comply with Section 1007.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.

Commenter's Reason: This modification eliminates the controversial issue in the original proposal to require a nosing projection on all treads to gain support for the other necessary changes to this section that are detailed in the proponents supporting statement. This modification further returns the exception for "wider" treads that might be more difficult to construct of some materials and much of the original text that many seemed partial to.

Final Action: AS AM AMPC ____ D

E58-06/07, Part II
IRC R311.5.3.3

Proposed Change as Submitted:

Proponent: David W. Cooper, Stairway Manufacturers' Association

PART II – IRC

~~**R311.5.3.3**~~ **R311.5.4.3 Profile.** The radius of curvature at the ~~leading edge of the tread~~ nosing shall be no greater than 9/16 inch (14 mm). The nosings shall project 3/4 inch (19 mm) but not more than 1.25 inches (32 mm) beyond the tread below on stairs with solid risers. The tolerance between the largest and smallest nosing projection shall not exceed 3/8 inch (9.5 mm) within any stairway. ~~A nosing not less than 3/4 inch (19 mm) but not more than 1 1/4 inch (32 mm) shall be provided on stairways with solid risers. The greatest nosing~~

~~projection shall not exceed the smallest nosing projection by more than 3/8 inch (9.5 mm) between two stories, including the nosing at the level of floors and landings.~~ Beveling of nosings shall not exceed 1/2 inch (12.7 mm). Risers shall be vertical or sloped under the tread above from the underside of the ~~leading edge of the tread~~ nosing above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter (102 mm) sphere.

Exception~~s~~:

1. ~~A nosing is not required where the tread depth is a minimum of 11 inches (279 mm).~~
2. ~~2.~~ The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.

Reason: (IRC) The purpose of the change is for clarification of language and intent.. This proposal is necessary to correct errors in the code as well as ease understanding.

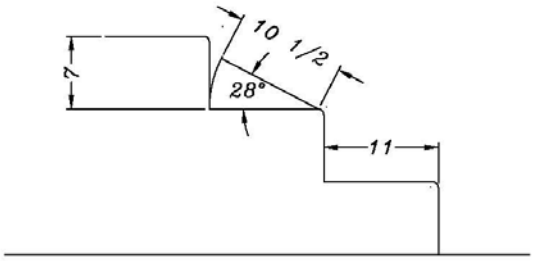
The text of this section could be less confusing if the code's defined term "nosing" is substituted for "leading edge". The word nosing is used throughout the industry in the daily; manufacture, distribution, sale and installation of treads, landing tread and return nosing mouldings, and stairs. In addition the IBC definition in *"**1002.1 NOSING**. The leading edge of treads of stairs and of landings at the top of stairway flights."* very simply includes the answer to the questions: "Leading edge of what?", "Does the code mean Nosing?", Is a Nosing different than a leading edge of a tread or leading edge of a stair or leading edge of a landing? Furthermore by substituting the defined term the definition's reference to the nosing of landings further clarifies. In this particular code use of the defined term can simplify and eliminate confusing and redundant language that causes people to think that there is a difference between nosing and leading edge.

The inserted text is intended to be editorial and result in more easily understood text that will convey the code's intent. Use of the code's defined term STAIRWAY in place of the laborious sentence referencing stories, floors, and landings, is also intended to convey the same meaning.

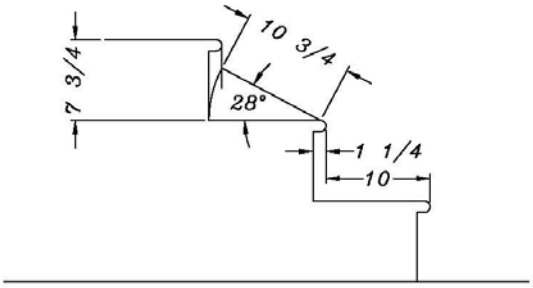
When descending a stair the user places the ball and toes of the foot onto the tread below. From this pivot point the heel then drops in an arc until the foot is balanced on the tread and the weight shift can be completed to swing the other foot to the next tread below. As the heel drops in the arc a nosing projection allows additional clearance for the heel. (see graphic below) The same relief can be obtained by sloping the riser under the upper tread. The word "under" is being added to clarify the intent that the riser may be sloped back into the stair as an alternative to the use of a nosing projection that allows heel relief for the descending user. Currently the code is misinterpreted to allow the riser to be sloped out onto the tread below which causes an effective shortening of the tread depth expected by the user.

In the diagram below an 11 inch tread is shown without a nosing projection. The effective tread depth in descent is diminished when a nosing projection is not used and in the case illustrated the radius at the nosing which is normally provided to reduce wear and chipping at the nosing actually reduces the 11 inch tread depth below that of the 10 inch tread with a nosing projection of 1-1/4 inches. For this reason and others related to the effect of lower risers often used with deeper treads, larger treads should be required to have a nosing projection especially where this is normally provided and expected in residential applications. Please see graphic below illustrating the maximum space available for the heel to arc onto the tread.

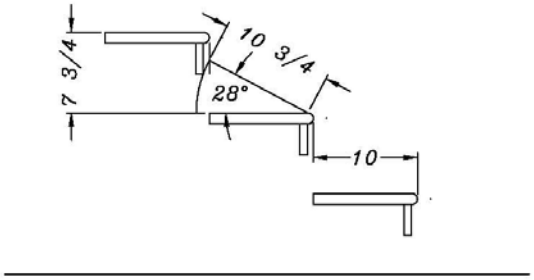
(The following graphic was provided as part of the reason for the IBC and IRC proposed changes.)



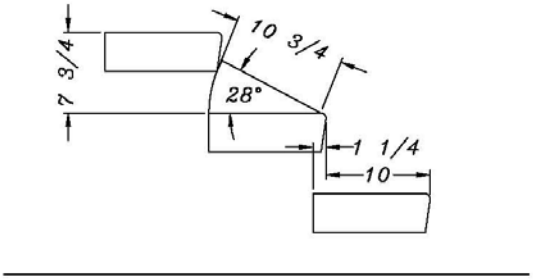
No Nosing Projection - shows that foot space of 11 inch tread depth is less than conventional with only 10 inch tread depth and that a change in rise has no effect on foot space.



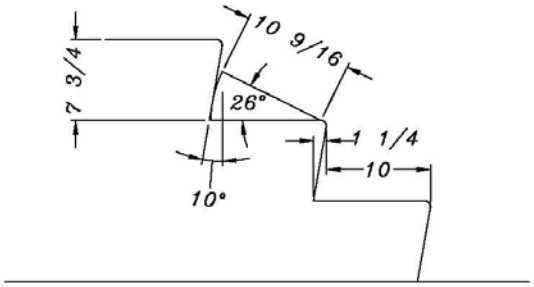
Conventional Construction



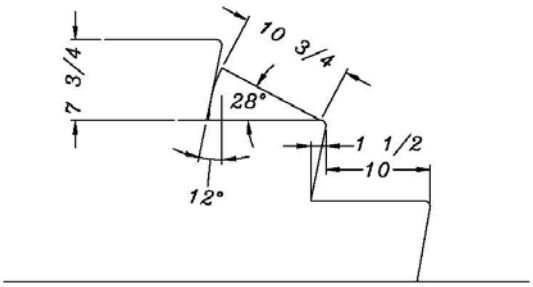
Open Riser Without Projection - shows lack of projection has no effect on foot space if opening limiter is clear of heel arc.



Open Riser With Projection - shows thicker treads required to reduce opening could affect available tread depth



Sloped Riser - shows riser angle at $1\frac{1}{4}$ inch projection has less available foot space than conventional



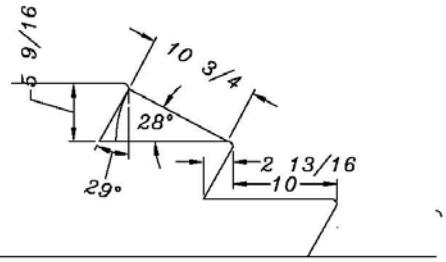
Sloped Riser - shows riser angle and projection required to attain same available foot space as conventional

PROFILE STUDY

Although not all possibilites are illustrated here, the intent is to show several of the factors, controlled by the sections of the ICC codes for **Profile,** related to the need for a nosing projection in the descent of stairways. Although the anatomy of the foot projects the heel from the back of the leg and shoed the projection is appoximately 1 to 2 inches the illustrations are simply a comparison of the maximum available foot space. It is not normal for the heel to be pushed back against the riser in descent.

In each example we have drawn an arc from the restriction of space at the back of the tread to the the intersection of the vertical plane of the nosing.

Each of the diagrams is drawn with the same nosing radius and pivot point at the nosing edge.



Sloped Riser - shows that lower riser heights of stairs with projection could affect available foot space also shows riser angle required to attain foot space of Conventional. For this and other reasons related to propotion it is best to use wider treads with shorter risers.

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

Committee Action: **Approved as Submitted**

Committee Reason: This new language includes the newly defined term “nosing”. Having a nosing on a stair tread is important to the safety of a stair, especially with an eleven inch tread application.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

David W. Cooper, Stairway Manufacturers Association, requests Approval as Modified by this public comment for Part II.

Modify proposal as follows:

R311.5.4.3 Profile. The radius of curvature at the nosing shall be no greater than 9/16 inch (14 mm). ~~The nosings shall project 3/4 inch (19 mm) but not more than 1.25 inches (32 mm) beyond the tread below on stairs with solid risers. The tolerance between the largest and smallest nosing projection shall not exceed 3/8 inch (9.5 mm) within any stairway.~~ A nosing not less than 3/4 inch (19 mm) but not more than 1 1/4 inch (32 mm) shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8 inch (9.5 mm) between two stories, including the nosing at the level of floors and landings. Beveling of nosings shall not exceed 1/2 inch (12.7 mm). Risers shall be vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter (102 mm) sphere.

Exceptions~~:~~

1. A nosing is not required where the tread depth is a minimum of 11 inches (279 mm).
2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.

Commenter's Reason: This modification eliminates the controversial issue in the original proposal to require a nosing projection on all treads to gain support for the other necessary changes to this section that are detailed in the proponents supporting statement. This modification further returns the exception for "wider" treads that might be more difficult to construct of some materials and much of the original text that many seemed partial to.

Public Comment 2:

Brian Sause, National Association of Home Builders (NAHB), requests Disapproval.

Commenter's Reason: The proposed change to the stairway profile measurements fails to consider all types of stair materials and was submitted to address the "typical" wood staircase found in many homes. However, as we all know, there are stairs both inside and outside of homes and stairs of numerous materials. The revision of the leading edge measurements only applies practically to the leading edge of wood interior staircases and fails to account for other materials where a nosing has not and should not be required. If this proposal is approved, all staircases will require a shaped "nosing"; the shaped nosing is not available/manufactured in many products, such as tile, masonry, or stone staircases. Additionally, the exception for a minimum tread depth needs to be preserved for these types of staircases where a nosing is neither feasible nor practical. We must also consider the implications this change will have on exterior steps where masonry steps often have a much larger tread depth and the exception would apply.

Note: Part I of this proposal was Disapproved. It suggested a similar modification to the profile provisions of the IBC. The committee's reason for disapproval was the current term "leading edge" was sufficient and lack of technical justification in revising the profile measurements.

Final Action: AS AM AMPC ____ D

E59-06/07, Part I

1009.3 (New), 1009.3, 1009.3.1, 1009.3.2 (IFC [B] 1009.3 (New), [B] 1009.3.1, [B] 1009.3.2)

Proposed Change as Submitted:

Proponent: David W. Cooper, Stairway Manufacturers' Association

PART I – IBC MEANS OF EGRESS

1. Add new text as follows:

1009.3 Walk line. The stairway walk line shall be located on the side of the stairway with the shortest path of travel, through a point 12 inches (305mm) from the wall or on open sides of stairs, through a point 12 inches (305 mm) from the guard in-fill, measured on the usable portion of the tread. The walk line shall be extended through this point on each flight in a single continuous smooth line in the direction of travel. On flights with winder treads the through-point of the walk line shall be measured at a winder.

2. Revise as follows:

~~**1009.3**~~ **1009.4 Stair treads and risers.** Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between nosings of adjacent treads. ~~Stair~~ Rectangular and winder tread depth shall be 11 inches (279 mm) minimum~~. The riser height shall be measured vertically between the leading edges of adjacent treads. The tread depth shall be~~ measured horizontally between the vertical planes of the nosings ~~foremost projection~~ of adjacent treads at the intersection of the walk line and the nosing. ~~and at a right angle to the tread's leading edge.~~ Winder treads shall have ~~a minimum walk line tread depth of 11 inches (279 mm) measured at a right angle to the tread's leading edge at a point 12 inches (305 mm) from the side where the treads are narrower and~~ a ~~minimum~~ usable tread depth ~~of~~ not less than 10 inches (254 mm) at any point.

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.
3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum rectangular and winder tread depth shall be 10 inches (254 mm); ~~the minimum winder tread depth at the walk line shall be 10 inches (254 mm); and the minimum~~ winder treads shall have a usable tread depth ~~shall be~~ not less than 6 inches (152 mm) at any point. A nosing projection not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways ~~with solid risers~~ where the tread depth is less than 11 inches (279 mm).
5. See the Section 3403.4 for the replacement of existing stairways.

~~**1009.3.1**~~ **1009.4.1 Winder treads.** Winder treads are not permitted in means of egress stairways ~~except within a dwelling unit~~.

Exception~~s~~:

1. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; winder treads shall be permitted.

~~1~~ 2. Curved stairways in accordance with Section 1009.7.
~~2.~~ 3. Spiral stairways in accordance with Section 1009.8.

~~**1009.3.2**~~ **1009.4.2 Dimensional uniformity.** Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest rectangular tread depth shall not exceed 0.375 inch (9.5 mm) in any flight of stairs. The tolerance between the largest and smallest ~~greatest~~ winder tread depth at the ~~12 inch (305 mm)~~ walk line within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm) ~~measured at a right angle to the tread's leading edge~~.

Exception~~s~~: ~~1.~~ Nonuniform riser dimensions of aisle stairs complying with Section 1025.11.2.
~~2. Consistently shaped winders, complying with Section 1009.3, differing from rectangular treads in the same stairway flight~~.

Where the bottom or top riser adjoins a sloping public way, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height, with the variation in height of the bottom or top riser not to exceed one unit vertical in 12 units horizontal (8-percent slope) of stairway width. The nosings or leading edges of treads at such nonuniform height risers shall have a distinctive marking stripe, different from any other nosing marking provided on the stair flight. The distinctive marking stripe shall be visible in descent of the stair and shall have a slip-resistant surface. Marking stripes shall have a width of at least 1 inch (25 mm) but not more than 2 inches (51 mm).

Reason: The purpose of the proposed change is to add new requirements. The current text allows for wide interpretation of the arbitrary location of the walk line. Without more prescriptive code the problems associated with arbitration of this critical design factor after stairs are built will continue to accumulate wasted time and costs for regulatory agencies, contractors, stairbuilders and homeowners not to mention unnecessary material and labor costs to make changes.

This will be the third cycle in a row that the topic of the walk line has been brought before the ICC. I think it is fair to say that in each of the previous cycles everyone recognized the associated problems to the industry that were brought forward and a need for a change to eliminate them with a better standard for the location of the walk line. In the last two cycles the proposals included a relationship to the handrail location. The arguments in opposition focused on the association of the walk line in relationship to the handrail and brought out some additional problems that could occur with enforcement. In this proposal handrail location is not a factor in the determination of the walk line location as the wall and/or required guard become the reference point. The additional reference of the guard in-fill is needed for open sides of stairs to eliminate confusion in measuring to the wall that often supports the open side of a stair from below, which has no relationship to the walk line. Guard in-fill has been specified because this is the closest point of the guard to the usable tread. We have done our best to separate and alleviate these issues to provide enforceable code language.

Important to the understanding of this proposal is the fact that the walk line is an element of the *stairway*, just as are width and headroom. In order to aid this understanding a new section has been added to the beginning of the stairway section prior to the treads and risers section to indicate this priority. This also allows us to establish the necessary parameters of the walk line without adding confusing text to the treads and risers section and permits significant simplification of the subsequent section on tread depth by providing a method to regulate all treads.

The walk line is an established line on the stair showing the path of travel used to design the stair. At 12 inches this represents the foot closest to the inside of the turn or shortest side of the stairway. In stairs that turn, the designer uses this line to establish minimum tread depth. The ICC and the legacy codes all recognize that the walk line should be located on the side where treads are narrower or in other words the shortest side of turning stairways which in most cases is the most common path of travel. This important relationship remains unchanged and is clarified for stairs that may even reverse direction or have changes in width by specifying that the walk line shall be determined on one side of the *stairway*. Stairways by definition include all flights between floors. By choosing the side with the shortest path of the entire stairway, then choosing a point on each flight to measure on the usable portion of the tread, a walk line maybe established relevant to the function of the entire stairway in compliance with actual stairway use.

In other codes around the world the walk line is sometimes positioned on the opposite side of the stairway or in the center for various reasons. In any case the intent in every code is to regulate the minimum standard tread depth at this critical point such that the minimum tread depth of winders can be associated with the minimum tread depth for rectangular treads (fliers). However because it is impossible to regulate where people will choose to walk we must recognize that people not only change their stride on winders and landings they are actually turning and pivoting as they traverse winders and it is not the intent to equalize the tread depth of winders and rectangular treads at the walk line.

In the ICC codes all treads are recognized to be one of two types, rectangular treads (fliers) with parallel edges and winders treads with nonparallel edges. Both of these treads can be regulated for tread depth at the walk line allowing us to simplify the standard in regard to how tread depth is measured. Of course since a rectangular tread (flier) has parallel edges, its width can be regulated and measured at any point and it is understood that the code would still require this in order to determine the tread type. This test is required in the IBC because winder treads are not permitted in some egress stairs and both the IBC and IRC regulate winder tread depth at two points. This proposal allowing all treads to be regulated at the walk line offers us the opportunity to simplify the text in regard to the measurement criteria and establish a method that works for all treads.

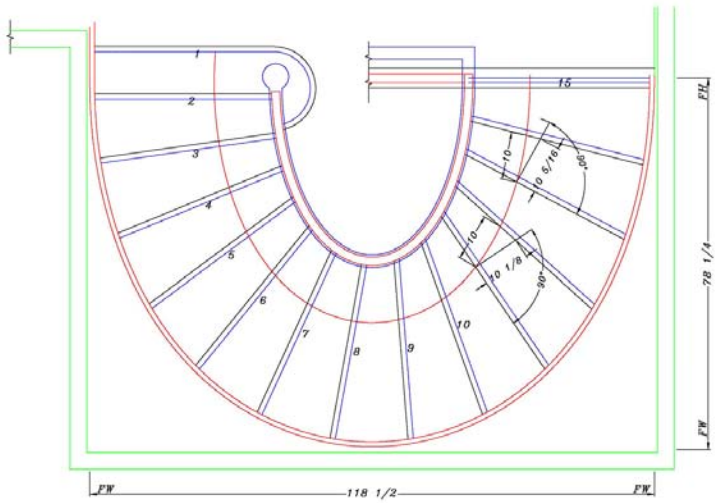
The tread depth measuring method prescribed by this proposal allows the tread depth to be measured at the intersection of the walk line and the nosing or leading edge of the tread. This is critical to equal division of curved walk lines and the formation of uniform winder treads. This is clearly explained in the attached graphics that show the discrepancies when measuring winders by the current method. The current method is flawed and results in irregular distribution of the treads edges that do not correlate with the user's experience

Further clarification is given to the concern for measuring depth of winder treads by establishing that both the 6 inch minimum measurement and the walk line measurement are to be taken on the "usable" portion of the tread where the foot can be placed when traversing the stairway. Although this is the historic basis for this measurement this simple word will allow more consistent interpretation and enforcement. To further simplify and eliminate the need to prescribe a particular place on the tread to verify the narrow end (10inch or 6 inch) measurement the words "at any point" allows for less confusion in measuring treads that may have narrowing at two points.

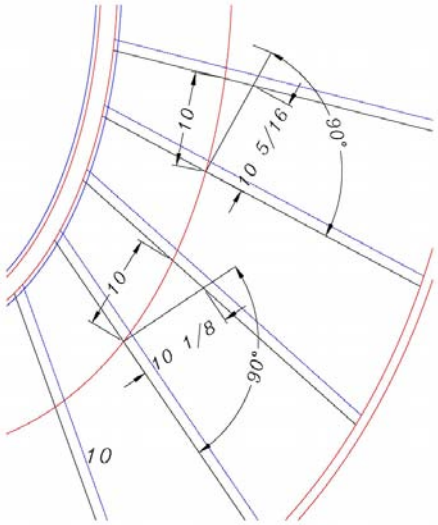
The language has been further simplified by using the word "nosing" defined in the code as: **1002.1 NOSING**. The leading edge of treads of stairs and of landings at the top of stairway flights.

We have also submitted a proposal that will add this definition to the IRC for those jurisdictions not adopting the IBC and have submitted changes to the sections on Profile and other related sections to correspond. It only makes sense to use the definition when it can simplify the language and lead to more consistent understanding across the industry.

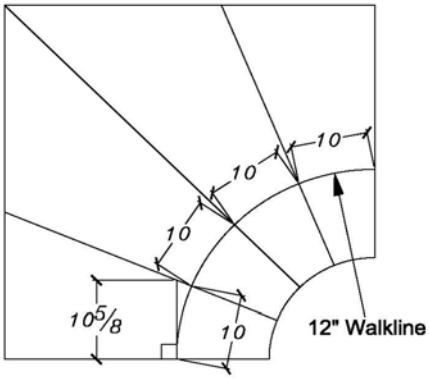
Finally in the following sections on winder treads and dimensional uniformity the intent was only to clarify or make editorial changes to correlate with the changes to the preceding sections. The changes to the exceptions are possible due to these clarifications and do not change the intent and need to regulate winder treads separately from rectangular treads for dimensional uniformity and tread depth.



ELLIPSE WITH STRAIGHT RISERS



Enlarged Area From Elliptical Stair Above: This illustrates the reason to measure winder tread depth where the walk line intersects the nosings.



Measuring between the intersections of the walk line and the leading edge of winder treads more clearly represents the users experience of tread depth when walking on winder treads. This measuring method accurately reflects how uniform winder treads are designed by dividing the walkline into equal segments.

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

Committee Action: **Disapproved**

Committee Reason: This is a good start in the right direction for a consistent way to measure stairways. A concern is where exactly the walk line will be measured. As the proposal is currently written, it is not possible to measure to the guard until the guard is installed. The term 'guard in-fill' is too open for interpretation. In the last sentence of proposed 1009.4, the term 'minimum' that is proposed to be deleted is more understandable than the proposed term 'usable'.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

David W. Cooper, Stairway Manufacturers Association, requests Approval as Modified by this public comment for Part I.

Modify proposal as follows:

1009.3 Walk line. The stairway walk line shall be located through a point 12 inches (305 mm) from ~~on~~ the side of the stairway with the shortest path of travel~~,~~ and extended through ~~a~~ this point ~~12 inches (305mm) from the wall or on open sides of stairs, through a point 12 inches (305 mm) from the guard in fill, measured on the usable portion of the tread. The walk line shall be extended through this point on each flight~~ in a single continuous smooth line in the direction of travel. On flights with winder treads the through-point of the walk line shall be measured at a winder. The entire 12 inch (305 mm) dimension shall fit on that portion of the tread that is available for placement of the foot while walking in ascent or descent of the stair. On stairways with sides of equal length the walk line may be positioned on either side.

1009.4 Stair treads and risers. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between nosings of adjacent treads. Rectangular and winder tread depth shall be 11 inches (279 mm) minimum measured horizontally between the vertical planes of the nosings of adjacent treads at the intersection of the walk line and the nosing. Winder treads shall have a minimum ~~usable~~ tread depth not less than 10 inches (254 mm) at any point.

Exceptions:

1. Alternating tread devices in accordance with Section 1009.9.
2. Spiral stairways in accordance with Section 1009.8.
3. Aisle stairs in assembly seating areas where the stair pitch or slope is set, for sightline reasons, by the slope of the adjacent seating area in accordance with Section 1025.11.2.
4. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be 7.75 inches (197 mm); the minimum rectangular and winder tread depth shall be 10 inches (254 mm); winder treads shall have a ~~usable~~ minimum tread depth not less than 6 inches (152 mm) at any point. A nosing projection not less than 0.75 inch (19.1 mm) but not more than 1.25 inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).
5. See the Section 3403.4 for the replacement of existing stairways.

1009.4.1 Winder treads. Winder treads are not permitted in means of egress stairways.

Exceptions:

1. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; winder treads shall be permitted.
2. Curved stairways in accordance with Section 1009.7.
3. Spiral stairways in accordance with Section 1009.8.

1009.4.2 Dimensional uniformity. Stair treads and risers shall be of uniform size and shape. The ~~tolerance~~ difference between the largest and smallest riser height or between the largest and smallest rectangular tread depth shall not exceed 0.375 inch (9.5 mm) in any flight of stairs. Determined independent of the rectangular treads, ~~T~~the ~~tolerance~~ difference between the largest and smallest winder tread depth at the walk line within any flight of stairs shall not exceed the smallest by more than 0.375 inch (9.5 mm).

Exception: Nonuniform riser dimensions of aisle stairs complying with Section 1025.11.2.

Where the bottom or top riser adjoins a sloping public way, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height, with the variation in height of the bottom or top riser not to exceed one unit vertical in 12 units horizontal (8-percent slope) of stairway width. The nosings or leading edges of treads at such nonuniform height risers shall have a distinctive marking stripe, different from any other nosing marking provided on the stair flight. The distinctive marking stripe shall be visible in descent of the stair and shall have a slip-resistant surface. Marking stripes shall have a width of at least 1 inch (25 mm) but not more than 2 inches (51 mm).

Commenter's Reason: The purpose of the proposed modification resolves all the concerns stated by both committees and clarifies the intent of the proponent. I respectfully wish to point out that although good stairway design should include the location of the handrail within reach of the walk line, current code development has rebuked this association for several cycles and therefore this modification will have no effect on the handrail location on any stairway.

Final Action: AS AM AMPC ____ D

E59-06/07, Part II
IRC R311.5.3 (New), R311.5.3, R311.5.3.1, R311.5.3.2

Proposed Change as Submitted:

Proponent: David W. Cooper, Stairway Manufacturers' Association

PART II – IRC BUILDING/ENERGY

1. Add new text as follows:

R311.5.3 Walk line. The stairway walk line shall be located on the side of the *stairway* with the shortest path of travel, through a point 12 inches (305mm) from the wall or on open sides of stairs, through a point 12 inches (305 mm) from the guard in-fill, measured on the usable portion of the tread. The walk line shall be extended through this point on each flight in a single continuous smooth line in the direction of travel. On flights with winder treads the through-point of the walk line shall be measured at a winder.

2. Revise as follows:

~~R311.5.3~~ R311.5.4 Stair treads and risers.

~~R311.5.3.1~~ R311.5.4.1 Riser height. The maximum riser height shall be 7 3/4 inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

~~R311.5.3.2~~ R311.5.4.2 Tread depth. ~~The minimum~~ Rectangular and winder tread depth shall be 10 inches (254 mm) minimum~~. The tread depth shall be~~ measured horizontally between the vertical planes of the ~~foremost projection~~ nosing of adjacent treads ~~and at a right angle to the tread's leading edge~~ at the intersection of the walk line and the nosing. The greatest rectangular tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). ~~Winder treads shall have a minimum tread depth of 10 inches (254 mm) measured as above at a point 12 inches (305 mm) from the side where the treads are narrower.~~ Winder treads shall have a ~~minimum~~ usable tread depth of not less than 6 inches (152 mm) at any point. Within any flight of stairs, the largest winder tread depth at the ~~12 inch (305 mm)~~ walk line shall not exceed the smallest winder tread depth by more than 3/8 inch (9.5 mm).

Reason: The purpose of the proposed change is to add new requirements. The current text allows for wide interpretation of the arbitrary location of the walk line. Without more prescriptive code the problems associated with arbitration of this critical design factor after stairs are built will continue to accumulate wasted time and costs for regulatory agencies, contractors, stairbuilders and homeowners not to mention unnecessary material and labor costs to make changes.

This will be the third cycle in a row that the topic of the walk line has been brought before the ICC. I think it is fair to say that in each of the previous cycles everyone recognized the associated problems to the industry that were brought forward and a need for a change to eliminate them with a better standard for the location of the walk line. In the last two cycles the proposals included a relationship to the handrail location. The arguments in opposition focused on the association of the walk line in relationship to the handrail and brought out some additional problems that could occur with enforcement. In this proposal handrail location is not a factor in the determination of the walk line location as the wall and/or required guard become the reference point. The additional reference of the guard in-fill is needed for open sides of stairs to eliminate confusion in measuring to the wall that often supports the open side of a stair from below, which has no relationship to the walk line. Guard in-fill has been specified because this is the closest point of the guard to the usable tread. We have done our best to separate and alleviate these issues to provide enforceable code language.

Important to the understanding of this proposal is the fact that the walk line is an element of the *stairway*, just as are width and headroom. In order to aid this understanding a new section has been added to the beginning of the stairway section prior to the treads and risers section to indicate this priority. This also allows us to establish the necessary parameters of the walk line without adding confusing text to the treads and risers section and permits significant simplification of the subsequent section on tread depth by providing a method to regulate all treads.

The walk line is an established line on the stair showing the path of travel used to design the stair. At 12 inches this represents the foot closest to the inside of the turn or shortest side of the stairway. In stairs that turn, the designer uses this line to establish minimum tread depth. The ICC and the legacy codes all recognize that the walk line should be located on the side where treads are narrower or in other words the shortest side of turning stairways which in most cases is the most common path of travel. This important relationship remains unchanged and is clarified for stairs that may even reverse direction or have changes in width by specifying that the walk line shall be determined on one side of the *stairway*. Stairways by definition include all flights between floors. By choosing the side with the shortest path of the entire stairway, then choosing a point on each flight to measure on the usable portion of the tread, a walk line maybe established relevant to the function of the entire stairway in compliance with actual stairway use.

In other codes around the world the walk line is sometimes positioned on the opposite side of the stairway or in the center for various reasons. In any case the intent in every code is to regulate the minimum standard tread depth at this critical point such that the minimum tread depth of winders can be associated with the minimum tread depth for rectangular treads (fliers). However because it is impossible to regulate where people will choose to walk we must recognize that people not only change their stride on winders and landings they are actually turning and pivoting as they traverse winders and it is not the intent to equalize the tread depth of winders and rectangular treads at the walk line.

In the ICC codes all treads are recognized to be one of two types, rectangular treads (fliers) with parallel edges and winders treads with nonparallel edges. Both of these treads can be regulated for tread depth at the walk line allowing us to simplify the standard in regard to how tread depth is measured. Of course since a rectangular tread (flier) has parallel edges, its width can be regulated and measured at any point and it is understood that the code would still require this in order to determine the tread type. This test is required in the IBC because winder treads are not permitted in some egress stairs and both the IBC and IRC regulate winder tread depth at two points. This proposal allowing all treads to be regulated at the walk line offers us the opportunity to simplify the text in regard to the measurement criteria and establish a method that works for all treads.

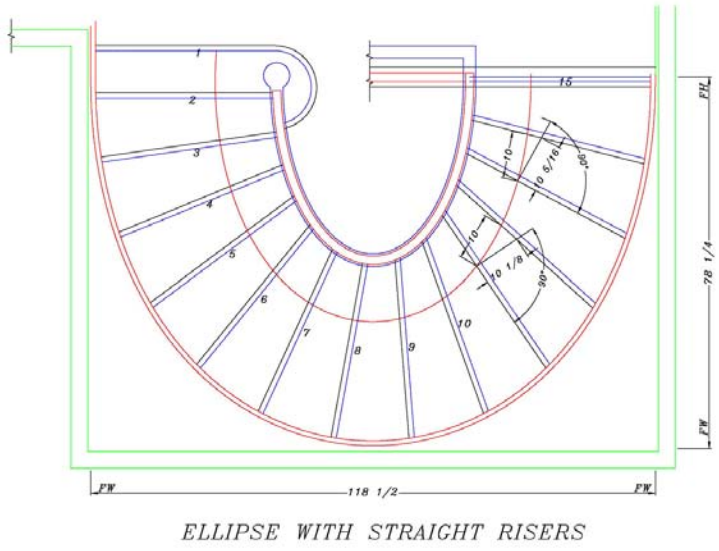
The tread depth measuring method prescribed by this proposal allows the tread depth to be measured at the intersection of the walk line and the nosing or leading edge of the tread. This is critical to equal division of curved walk lines and the formation of uniform winder treads. This is clearly explained in the attached graphics that show the discrepancies when measuring winders by the current method. The current method is flawed and results in irregular distribution of the treads edges that do not correlate with the user's experience

Further clarification is given to the concern for measuring depth of winder treads by establishing that both the 6 inch minimum measurement and the walk line measurement are to be taken on the "usable" portion of the tread where the foot can be placed when traversing the stairway. Although this is the historic basis for this measurement this simple word will allow more consistent interpretation and enforcement. To further simplify and eliminate the need to prescribe a particular place on the tread to verify the narrow end (10inch or 6 inch) measurement the words "at any point" allows for less confusion in measuring treads that may have narrowing at two points.

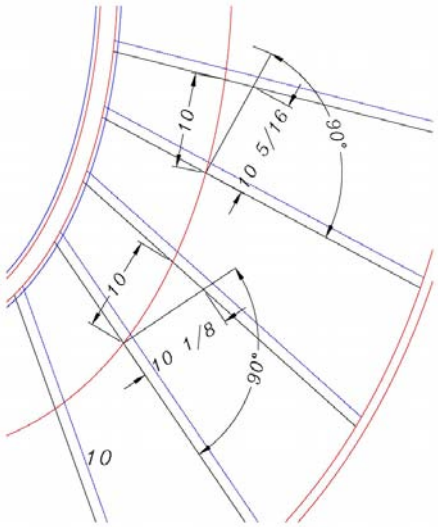
The language has been further simplified by using the word "nosing" defined in the code as: **1002.1 NOSING**. The leading edge of treads of stairs and of landings at the top of stairway flights.

We have also submitted a proposal that will add this definition to the IRC for those jurisdictions not adopting the IBC and have submitted changes to the sections on Profile and other related sections to correspond. It only makes sense to use the definition when it can simplify the language and lead to more consistent understanding across the industry.

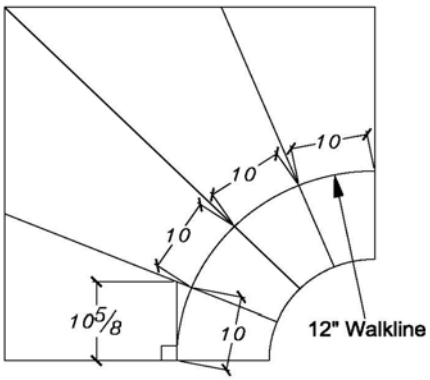
Finally in the following sections on winder treads and dimensional uniformity the intent was only to clarify or make editorial changes to correlate with the changes to the preceding sections. The changes to the exceptions are possible due to these clarifications and do not change the intent and need to regulate winder treads separately from rectangular treads for dimensional uniformity and tread depth.



ELLIPSE WITH STRAIGHT RISERS



Enlarged Area From Elliptical Stair Above: This illustrates the reason to measure winder tread depth where the walk line intersects the nosings.



Measuring between the intersections of the walk line and the leading edge of winder treads more clearly represents the users experience of tread depth when walking on winder treads. This measuring method accurately reflects how uniform winder treads are designed by dividing the walkline into equal segments.

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

Committee Action: **Disapproved**

Committee Reason: The words "usable" and "walkline" are undefined terms. If this proposed language was approved the IRC would become more restrictive than the IBC. In addition, a monumental type stair would be required to have multiple hand rails.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

David W. Cooper, Stairway Manufacturers Association, requests Approval as Modified by this public comment for Part II.

Modify proposal as follows:

R311.5.3 Walk line. The stairway walk line shall be located through a point 12 inches (305 mm) from ~~on~~ the side of the stairway with the shortest path of travel~~,~~ and extended through ~~a~~ this point ~~12 inches (305mm) from the wall or on open sides of stairs, through a point 12 inches (305 mm) from the guard in fill, measured on the usable portion of the tread. The walk line shall be extended through this point on each flight~~ in a single continuous smooth line in the direction of travel. On flights with winder treads the through-point of the walk line shall be measured at a winder. The entire 12 inch (305 mm) dimension shall fit on that portion of the tread that is available for placement of the foot while walking in ascent or descent of the stair. On stairways with sides of equal length the walk line may be positioned on either side.

R311.5.4 Stair treads and risers.

R311.5.4.1 Riser height. The maximum riser height shall be 7 3/4 inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

R311.5.4.2 Tread depth. Rectangular and winder tread depth shall be 10 inches (254 mm) minimum measured horizontally between the vertical planes of the nosing of adjacent treads at the intersection of the walk line and the nosing. The greatest rectangular tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Winder treads shall have a minimum ~~usable~~ tread depth of ~~not less than~~ 6 inches (152 mm) at any point. Determined independent of the rectangular treads ~~W~~within any flight of stairs, the largest winder tread depth at the walk line shall not exceed the smallest winder tread depth by more than 3/8 inch (9.5 mm).

Commenter's Reason: The purpose of the proposed modification resolves all the concerns stated by both committees and clarifies the intent of the proponent. I respectfully wish to point out that although good stairway design should include the location of the handrail within reach of the walk line, current code development has rebuked this association for several cycles and therefore this modification will have no effect on the handrail location on any stairway.

Final Action: AS AM AMPC ____ D

E61-06/07
1009.3.3 (IFC [B] 1009.3.3)

Proposed Change as Submitted:

Proponent: Bill Conner, Conner Associates LLC, representing himself

Revise as follows:

1009.3.3 Profile. The radius of curvature at the leading edge of the tread shall be not greater than 0.5 inch (12.7 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (nosings) of treads shall project not more than 1.25 inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a flight.

Exceptions:

1. Solid risers are not required for stairways that are not part of a required means of egress ~~to comply with Section 1007.3~~, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.
3. Openings in risers required to be solid shall be a size that does not permit the passage of ½ inch (13 m) diameter sphere.

Reason: The purpose of this proposal is to address what size holes in risers should be permitted. The intent of this change is for coordination with stairways as scoped in ADAAG.

Can solid risers have holes? How big can the hole be and the riser still be considered 'solid'? IBC currently allows for 4" opening in stairways that are not part of accessible means of egress. ADAAG requires all means of egress stairways to have solid risers.

Why is Exception 1 in Section 1009.3.3 for solid risers tied to accessible means of egress stairways? The open riser is a potential tripping hazard for people moving up the stairway, and is not an issue tied to accessible means of egress (especially when accessible means of egress is typically assisted use and going down the stairway, not up).

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

Committee Action: **Disapproved**

Committee Reason: The proposed language does not clarify when openings are permitted in stairways.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Modify proposal as follows:

1009.3.3 Profile. The radius of curvature at the leading edge of the tread shall be not greater than 0.5 inch (12.7 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (nosings) of treads shall project not more than 1.25 inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a flight.

Exceptions:

1. Solid risers are not required for stairways that are not part of a required means of egress, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.
3. ~~Openings in risers required to be solid shall be a size that does not permit the passage of ½ inch (13 m) diameter sphere.~~

Commenter's Reason: This public comment is limited to the revision proposed for Exception 1. The proposed revision to Exception 1 is for coordination with the new ADA/ABA Guidelines. In addition, it is not logical to tie solid risers to the requirements for stairways to serve as part of the accessible means of egress. Section 1007 deals with assisted evacuation using the stairway in emergency situations. Concerns with open risers is a function of moving up the stairways during normal use of the stairs.

The proposal for exception 3 is dropped based on committee comments and will be addressed at another time.

Final Action: AS AM AMPC ____ D

E62-06/07

1009.3.3, 1009.6 (IFC [B] 1009.3.3, [B] 1009.6)

Proposed Change as Submitted:

Proponent: Bill Conner, Conner Associates LLC, representing himself

Revise as follows:

1009.3.3 Profile. The radius of curvature at the leading edge of the tread shall be not greater than 0.5 inch (12.7 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (nosings) of treads shall project not more than 1.25 inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a flight.

Exceptions:

1. Solid risers are not required for stairways that are not required to comply with Section 1007.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.
3. Solid risers are not required for spiral stairways constructed in accordance with Section 1009.9.
4. Solid risers are not required for alternating tread devices constructed in accordance with Section 1009.10.

1009.6 Vertical rise. A flight of stairs shall not have a vertical rise greater than 12 feet (3658 mm) between floor levels or landings.

Exceptions:

1. Aisle stairs complying with Section 1025.
2. Spiral stairs complying with Section 1009.8.
3. Alternating tread devices complying with Section 1009.9.

Reason: The general requirements for solid risers and landing at 12 feet intervals, as currently stated, are applicable to all stairways. Spiral stairways and alternating tread devices are only used for limited access areas, such as catwalks in theaters, or roof access for maintenance and service personnel. Open risers and landings only at the top and bottom are necessary for these types of stairways to be constructed safely and efficiently.

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

Committee Action: **Disapproved**

Committee Reason: There was no justification for this change. The current code is clear for spiral stairways and alternating tread stairways.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Replace proposal with the following:

1009.3.3 Profile. The radius of curvature at the leading edge of the tread shall be not greater than 0.5 inch (12.7 mm). Beveling of nosings shall not exceed 0.5 inch (12.7 mm). Risers shall be solid and vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.52 rad) from the vertical. The leading edge (nosings) of treads shall project not more than 1.25 inches (32 mm) beyond the tread below and all projections of the leading edges shall be of uniform size, including the leading edge of the floor at the top of a flight.

Exceptions:

1. Solid risers are not required for stairways that are not required to comply with Section 1007.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3.
3. Solid risers are not required for spiral stairways constructed in accordance with Section 1009.9.
4. Solid risers are not required for alternating tread devices constructed in accordance with Section 1009.10.

Commenter's Reason: The two public comments are provided in order to split the question.

The committee incorrectly assumed that open risers were already permitted in spiral stairway and alternative tread devices. These elements are always constructed with open risers, because they would not be able to be constructed otherwise. However, there is no specific text in the code that allows them to have open risers.

Public Comment 2:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Replace proposal with the following:

1009.6 Vertical rise. A flight of stairs shall not have a vertical rise greater than 12 feet (3658 mm) between floor levels or landings.

Exceptions:

1. Aisle stairs complying with Section 1025.
2. Spiral stairs complying with Section 1009.8.
3. Alternating tread devices complying with Section 1009.9.

Commenter's Reason: The two public comments are provided in order to split the question.

The committee incorrectly assumed that intermediate landing in spiral stairway and alternative tread devices was already addressed. These elements are always constructed without intermediate landings when they travel more than 12', because they would not be able to be constructed otherwise. However, there is no specific text in the code that allows them to eliminate the general requirement in Section 1009.6. This is especially difficult for high limited access spaces, such as catwalks, which are very commonly accessed by spiral stairways.

Final Action: AS AM AMPC ____ D

E71-06/07

1009.11, 1009.11.1 (IFC [B] 1009.11, [B] 109.11.1)

Proposed Change as Submitted:

Proponent: Ed Donoghue, Edward A. Donoghue Associates, Inc., representing National Elevator Industry, Inc.

Revise as follows:

1009.11 Stairway to roof. In buildings located four or more stories in height above grade plane, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). In buildings without an occupied roof and not containing elevator equipment, access to the roof from the top story shall be permitted to be by an alternating tread device.

1009.11.1 Roof access. Where a stairway is provided to a roof, access to the roof shall be provided through a penthouse complying with Section 1509.2.

Exception: In buildings without an occupied roof and not containing elevator equipment, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 m^2) in area and having a minimum dimension of 2 feet (610 mm).

Reason: The purpose of the proposed change is to correlate with A17.1 ASME A17.1 requires stairs and a door to access elevator equipment. More specifically Section 2.27.3.2.1 of A17.1 states the following "a stairway with a swinging door and platform at the top level, conforming to 2.7.3.3 shall be provided from the top floor of the building to the roof level. Hatch covers as a means of access to roofs shall not be permitted." Currently the IBC allows ladders and hatch openings for non occupied roofs. This will allow these exceptions but only when elevator equipment is not located on the roof. Not having stairs and a door make maintenance more difficult and unsafe.

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

Committee Action: **Disapproved**

Committee Reason: The definition of occupied space already covers this concern, therefore, stair access to a roof with elevator equipment is not required.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Ed Donoghue, Edward A Donoghue Associates Inc. (EADAI), representing National Elevator Industry, Inc. (NEII) requests Approval as Modified by this public comment.

Replace proposal with the following:

1009.11 Stairway to roof. In buildings located four or more stories in height above grade plane, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope). ~~In buildings without an occupied roof, access to the roof from the top story shall be permitted to be by an alternating tread device.~~

Exception: Buildings containing unoccupied roofs that do not contain elevator equipment shall be permitted to provide access to the roof from the top story by an alternating tread device.

1009.11.1 Roof access. Where a stairway is provided to a roof, access to the roof shall be provided through a penthouse complying with Section 1509.2.

Exception: ~~In buildings without an occupied roof, access to the roof shall be permitted to be~~ Buildings containing unoccupied roofs that do not contain elevator equipment shall be permitted to provide access by a roof hatch or trap door not less than 16 square feet (1.5 m2) in area and having a minimum dimension of 2 feet (610 mm).

Commenter's Reason: The initial proposal was rejected based upon the fact that the term "occupied" would provide the stair that the ASME A17.1 would require for maintenance. It is the proponents belief that such spaces are generally not considered as occupied as only occasional maintenance occurs in such locations. The reason for this change initially is to correlate with ASME A17.1. ASME A17.1 requires stairs and a door to access elevator equipment. More specifically Section 2.7.3.2.1 of A17.1 states the following "a stairway with a swinging door and platform at the top level, conforming to 2.7.3.3 shall be provided from the top floor of the building to the roof level. Hatch covers as a means of access to roofs shall not be permitted." Currently the IBC allows ladders and hatch openings for non occupied roofs. Not having stairs and a door make maintenance more difficult and unsafe.

This public comment revises the originally proposed language to clarify which space contained the elevator equipment and to be more consistent with Section 1009.11.1 by creating an exception in section 1009.11.

Final Action: AS AM AMPC ____ D

E78-06/07
1010.9.1 (IFC [B] 1010.9.1)

Proposed Change as Submitted:

Proponent: John Rooney, United Spinal Association

Revise as follows:

1010.9.1 Curb~~, rail, wall~~ or barrier. A curb~~, rail, wall~~ or barrier shall be provided to serve as edge protection. A curb must be a minimum of 2 inches (51mm) in height. Barriers must be constructed so that the barrier

prevents the passage of a 4-inch-diameter (102 mm) sphere, where any portion of the sphere is within 4 inches (102 mm) of the floor or ground surface.

Reason: The proposed change will harmonize the code language with Section 405.9.2 of ICC/ANSI A117.1 and Section 405.9.2 of the ADA/ABA Guidelines. The laundry list is not needed since a "rail" or "wall" are types of barriers.

The proposal for a 2" dimension for a curb is consistent with current ADAAG. The new ADA/ABA Guidelines and ICC A117.1 do not indicate the height requirements if a curb option is chosen.

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

Committee Action: **Disapproved**

Committee Reason: The proposed 2 inch minimum high curb would conflict with the requirements in ICC A117.1 and the new ADA/ABA Accessibility Guidelines which require a 4 inch minimum high curb.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

John Rooney, United Spinal Association, requests Approval as Modified by this public comment.

Modify proposal as follows:

1010.9.1 Curb, rail, wall or barrier. A curb, rail, wall or barrier shall be provided to serve as edge protection. A curb must be a minimum of 2 inches (51mm) in height. Barriers must be constructed so that the barrier prevents the passage of a 4-inch-diameter (102 mm) sphere, where any portion of the sphere is within 4 inches (102 mm) of the floor or ground surface.

Commenter's Reason: The proposed deletion of "rail, wall" has been withdrawn from this proposal. The important issue is to identify the height of a curb when that option is chosen. The current language is not clear. Two proposals are offered to allow the members to decide on which curb height should be required – 2" or 4". The 2" height for curbs that serve as edge protection for ramps is found in current ADAAG requirements.

Public Comment 2:

John Rooney, United Spinal Association, requests Approval as Modified by this public comment.

Modify proposal as follows:

1010.9.1 Curb, rail, wall or barrier. A curb, rail, wall or barrier shall be provided to serve as edge protection. A curb must be a minimum of ~~2 inches (51mm)~~ 4 inches (102 mm) in height. Barriers must be constructed so that the barrier prevents the passage of a 4-inch-diameter (102 mm) sphere, where any portion of the sphere is within 4 inches (102 mm) of the floor or ground surface.

Commenter's Reason: The proposed deletion of "rail, wall" has been withdrawn from this proposal. The important issue is to identify the height of a curb when that option is chosen. The current language is not clear. Two proposals are offered to allow the members to decide on which curb height should be required – 2" or 4". Testimony during the hearings indicated that the language in the new ADA/ABA Guideline (which do not give a specific requirement for curbs) could be interpreted as requiring a 4" high curb.

Final Action: AS AM AMPC ____ D

E84-06/07

403.15 (New); 1011.6, Chapter 35 (IFC 1011.6, Chapter 45)

Proposed Change as Submitted:

Proponent: William M. Connolly, State of New Jersey, Department of Community Affairs, Division of Codes and Standards, representing International Code Council Ad Hoc Committee on Terrorism Resistant Buildings

1. Add new text as follows:

403.15 Exit path markings. Exit path markings shall be provided in accordance with Section 1011.6.

1011.6 Photoluminescent exit path markings: Photoluminescent exit path markings (outlining stripes) complying with UL 1994 shall be provided in buildings of Group B, E, M, and R-1 with occupied floors greater than 75 feet above the lowest level of fire department vehicle access. Exit stairways where photoluminescent exit path markings are required shall be continuously illuminated and lighting shall not be controlled by motion sensors or timers.

1011.6.1 Markings (outlining stripes) within vertical exits: Markings within vertical exits shall comply with Section 1011.6.1.1 through Section 1011.6.1.4.

1011.6.1.1 Steps: Outlining stripes shall be applied to the horizontal leading edge of each step and shall extend for the full length of the step. Outlining stripes shall have a minimum horizontal width of 1 inch (25 mm) and a maximum width of 2 inches (51 mm). The leading edge of the stripe shall be placed at a maximum of ½ inch (13 mm) from the leading edge of the step and the stripe shall not overlap the leading edge of the step by not more than ½ inch (13 mm) down the vertical face of the step.

1011.6.1.2 Landings: The leading edge of landings in exits shall be marked with outlining stripes consistent with the dimensional requirements for steps and shall be the same length as and consistent with the stripes on the steps or shall extend the full length of the leading edge of the landing.

1011.6.1.3 Handrails: All handrails and handrail extensions shall be marked with a stripe having a minimum width of 1 inch (25 mm). The stripe shall be placed on the top surface of the handrail for the entire length of the handrail, including extensions and newel post caps. Where handrails or handrail extensions bend or turn corners, the stripe shall not have a gap of more than 4 inches (102 mm).

1011.6.1.4 Floor perimeter demarcation stripes: Stair landings and other parts of the egress path, with the exception of the sides of steps, shall be provided with demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 1 (25 mm) to 2 inches (51 mm) wide with interruptions not exceeding 4 inches (102 mm).

1011.6.1.4.1 Floor mounted demarcation lines: Perimeter demarcation lines shall be placed within 4 inches of the wall and shall extend to within 2 inches (51 mm) of the markings on the leading edge of landings. The demarcation lines shall continue across the floor in front of all doors.

1011.6.1.4.2 Wall mounted demarcation lines: Perimeter demarcation lines shall be placed on the bottom edge of the wall no more than 4 inches (102 mm) above the finished floor. At the top or bottom of the stairs, demarcation lines shall drop vertically to the floor within 2 inches (51 mm) of the step or landing edge. Demarcation lines on walls shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path. Demarcation lines on walls shall continue across the face of all doors or may transition to the floor and extend across the floor in front of such doors.

2. Add standard to Chapter 35 (IFC Chapter 45) as follows:

UL

UL 1994-04 Luminous Egress Path Marking Systems, with revisions through February, 2005

Reason: This code change proposal is one of fourteen proposals being submitted by the International Code Council Ad Hoc Committee on terrorism Resistant Buildings.

The purpose of this code change is to add new requirements for photoluminescent exit path markings into the code.

The proposed new section on exit path markings will require photoluminescent exit path markings be provided in vertical exit enclosures. The Code currently has no requirements for the installation of these markings. This proposal will facilitate rapid egress and assist in full building evacuation and is drawn from Recommendations 17 and 18 of the National Institute of Standards and Technology's (NIST) report on the World Trade Center tragedy.

Up to this point, code requirements for high rise buildings were written under the assumption that the building would be evacuated floor by floor. In most instances, in a building with a full suppression system, only the floor where the fire is located and the floors immediately above and below would be evacuated. Acts of terrorism and accidental incidents like power failures have made it necessary to consider design for full building evacuation that is as rapid as possible. This may be made necessary in response to an event within the building or an event outside the building. The proposed code change to require exit path markings is intended to facilitate the most rapid possible full building evacuation.

In the City of New York, after the first bombing of the WTC, requirements were instituted to require exit path markings in vertical exit enclosures. This proposal is taken directly from those requirements.

New Section 1011.6 establishes the base requirement for the markings and requires compliance with UL 1994, a standard developed using an approved consensus process. As per this new section, the markings are required only in vertical exit enclosures. This is unlike previously unsuccessful proposals that attempted to establish requirements for low-level exit signage and exit access markings. The remainder of the new text establishes the minimum requirements for the markings.

Bibliography:
1. Reference Standard 6-1, Photoluminescent exit path markings as required by Local Law 26 of 2004, New York City Building Code, § 27-383(b)
2. National Institute of Standards and Technology. Final Report of the National Construction Safety Team on the Collapses of the World Trade Center Towers. United States Government Printing Office: Washington, D.C. September 2005.
3. UL 1994

Cost Impact: This proposal establishes a requirement for markings in vertical exit enclosures, which may increase costs, but only very modestly. The proponents believe that the decrease in egress and full building evacuation time outweighs the moderate cost of the markings.

Analysis: The standard UL 1994-04 has been reviewed for compliance with ICC Council Policy #28, Section 3.6. In the opinion of ICC Staff, the standard complies with ICC Criteria for referenced standards.

The action on the proposed change to Section 403.15 is dependent on the decision of the Means of Egress Committee to the remainder of the proposal, therefore, for consistency, the MEO Committee will make the determination for the entire proposal.

Committee Action: Disapproved

Committee Reason: The committee agreed the intent for egress guidance had merit, but believed that there were other products that could address the exiting issues raised. Several proponents had similar proposals. The committee asked the proponents to work together to resolve issues brought up during the discussions. The proposal should be technology neutral - not just for photoluminescent materials. The markings should delineate the exit path in the enclosed exit stairway. An additional concerns about E84-06/07 was that there was no explanation of the limitation to Groups B, E, M and R-1. Of special concern was no inclusion of Groups A and I. This proposal also extended the requirements outside the exit stairway by the wording in proposed Section 1011.6.

Assembly Action: None

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

William M. Connolly, State of New Jersey, Department of Community Affairs, Division of Codes and Standards, representing International Code Council Ad Hoc Committee on Terrorism Resistant Buildings, Vincent V.J. Bella, Manny Muniz, Manny Muniz Associates, LLC, representing Photoluminescent Safety Association and Mark Watson, Ecoglo, Ltd, requests Approval as Modified by this public comment.

Modify proposal as follows:

403.15 Exit path markings. Exit path markings shall be provided in exit enclosures in accordance with Section 1011.6.

1011 EXIT SIGNS AND PATH MARKINGS

1011.6 ~~Photoluminescent~~ eExit path markings: ~~Photoluminescent~~ Luminescent exit path marking~~s~~ systems that (~~outlining stripes~~) comply~~ing~~ with UL 1994 shall be provided in exit enclosures of buildings of Group A, B, E, I, M, and R-1 with an occupied floor~~s~~ ~~greater~~ located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access in order to delineate the exit path. ~~Exit stairways where photoluminescent exit path markings are required shall be continuously illuminated and lighting shall not be controlled by motion sensors or timers.~~

Exception: Luminescent exit path markings are not required at exit passageways located at the level of exit discharge.

1011.6.1 Markings ~~(outlining stripes)~~ within ~~vertical~~ exit~~s~~ enclosures: Markings within ~~vertical~~ exit~~s~~ enclosures shall comply with Section 1011.6.1.1 through Section 1011.6.1.4.

1011.6.1.1 Steps: ~~Outlining~~ A stripe~~s~~ shall be applied to the horizontal leading edge of each step and shall extend for the full length of the step. ~~Outlining stripes shall have a minimum horizontal width of 1 inch (25 mm) and a maximum width of 2 inches (51 mm). The leading edge of the stripe shall be placed at a maximum of ½ inch (13 mm) from the leading edge~~

~~of the step and the stripe shall not overlap the leading edge of the step by not more than ½ inch (13 mm) down the vertical face of the step.~~

1011.6.1.2 Landings: The leading edge of landings ~~in exits~~ shall be marked with ~~outlining~~ a stripe~~s~~ consistent with the dimensional requirements for steps and shall be the same length as and consistent with the stripes on the steps or shall extend the full length of the leading edge of the landing.

1011.6.1.3 Handrails: All handrails and handrail extensions shall be marked with a stripe ~~having a minimum width of 1 inch (25 mm)~~. The stripe shall be placed on top of or illuminate the top surface of the handrail for the entire length of the handrail, including extensions and newel post caps. ~~Where handrails or handrail extensions bend or turn corners, the stripe shall not have a gap of more than 4 inches (102 mm).~~

1011.6.1.4 ~~Floor~~ Perimeter demarcation lines ~~stripes~~: Stair landings and other parts of the exit enclosure ~~egress path~~, with the exception of the sides of steps, shall be provided with demarcation lines on the floor or on the walls or a combination of both. ~~The stripes shall be 1 (25 mm) to 2 inches (51 mm) wide with interruptions not exceeding 4 inches (102 mm).~~

Exception: Demarcation lines shall not extend in front of doors that lead out of an exit enclosure to the exit discharge.

1011.6.1.4.1 Floor mounted demarcation lines: ~~Perimeter~~ Floor mounted demarcation lines shall be placed within ~~4~~ inches of the wall and shall extend to within 2 inches (51 mm) of the markings on the leading edge of landings. The demarcation lines shall continue across the floor in front of all doors.

1011.6.1.4.2 Wall mounted demarcation lines: ~~Perimeter~~ Wall mounted demarcation lines shall be placed on the bottom edge of the wall no more than ~~4 inches (102 mm)~~ 8 inches (203 mm) above the finished floor. At the top or bottom of the stairs, demarcation lines shall drop vertically to the floor within 2 inches (51 mm) of the step or landing edge. Demarcation lines on walls shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path. Where the wall line is broken by a door ~~D~~demarcation lines on walls shall ~~continue across the face of all doors or may~~ transition vertically to the floor and extend across the floor in front of such door~~s~~ in accordance with 1011.6.1.4.1~~.~~

1011.6.1.5 Illumination. Exit enclosures where photoluminescent exit path markings are installed shall be continuously illuminated and lighting shall not be controlled by motion sensors or timers.

UL
UL 1994-04 Luminous Egress Path Marking Systems, with revisions through February, 2005

Commenter's Reason (Connolly): The Means of Egress Committee agreed the intent for egress guidance had merit and asked that certain concerns be addressed during the comment phase. The concerns were:

1. Proponents should work together to resolve issues brought up during discussions.
2. Be technology neutral.
3. Markings should delineate the exit path in the enclosed exit stairway.
4. No explanation of the limitations to Groups B, E, M and R-1.
5. Of special concern was no inclusion of Groups A and I.
6. Concerns about extending the requirements outside the exit stairway in 1011.6.

As requested by the Means of Egress Committee in concern #1, this proposal is a collaborative effort by the original proponent, William M. Connolly representing the International Code Council Ad Hoc Committee on Terrorism Resistant Buildings, Bob Eugene, Underwriters Laboratories, and Vincent "VJ" Bella, Retired State of Louisiana State Fire Marshal.

The following explains the rationale for the changes to address the committee concerns.

403.15 "Exit enclosures" is being added to specify where in the high rise building are exit path markings required. Vertical exit enclosures and exit passageways are both included in the scoping by this text.

1011 The heading is being modified to include path markings requirements in this section.

1011.6 As requested by the Means of Egress Committee in concern #2, the proposal is being modified to be technology neutral.

As requested by the Means of Egress Committee in concern #3, clarification is being added that the path markings are intended to more effectively delineate the exit path in exit enclosures. An exception is added to this section for exit passageways at the level of exit discharge.

As requested by the Means of Egress Committee in concern #4 and #5, the proposal is being modified to clarify that the charging requirement in Section 403.15 and the subsequent requirements in Section 1011.6 apply to exit enclosures of buildings with an occupied floor located more than 75 feet above the lowest level of fire department vehicle access. Group A & I occupancies were added in response to concerns expressed by the committee. The expected occupant load of these occupancies justifies the safeguards as a minimum requirement.

Illumination for photoluminescent exit path markings has been moved to a new section 1011.6.1.5.

The term "outlining stripes" is being deleted because it may be confusing as it applies to Sections 1011.6.1.4.1 and 1011.6.1.4.2 which use the terms "demarcation lines".

1011.6.1 The term "outlining stripes" is being deleted because it may be confusing as it applies to Sections 1011.6.1.4.1 and 1011.6.1.4.2 which use the terms "demarcation lines". Clarification has also been added to specify vertical exit enclosures.

1011.6.1.1, **1011.6.1.3 and 1011.6.1.4** As requested by the Means of Egress Committee in concern #2, the proposal is being modified to be technology neutral by removing dimensional requirements specific to photoluminescent technology. The referenced standard, UL 1994, already tests the various submitted technologies in the applications for which they will be listed to, such as for steps, handrails, landings, etc. The standard requires a 100% pass visibility test at a distance of 25 feet. IBC Section 1009.6 limits the vertical rise of a stair between floor levels or landings to 12 feet. It is therefore not necessary to define the various technology dimensions or specifications in these sections.

1011.6.1.2 The term "in exits" is being deleted so as to be clear that Section 10.11.6 only applies to exit enclosures in high rise buildings.

1011.6.1.4 As requested by the Means of Egress Committee in concern #6, the proposal is being modified to be specific that it only applies to the vertical exit enclosures.

The term "demarcation stripes" is being replaced with the term "demarcation lines" in order to be consistent with Sections 1011.6.1.4.1 and 1011.6.1.4.2 which use the terms "demarcation lines".

Demarcation lines are not required on either the wall or the floor at the door leading from the vertical exit enclosure that leads to the exit discharge.

1011.6.1.4.2 The 4 inch requirement in the first sentence is being changed to 8 inches in order to be consistent with similar requirements in IBC Section 411.7 which requires that path markings be located not more than 8 inches above the finished floor. This will allow the demarcation lines to be placed above moldings instead of directly on them.

The last sentence was modified to require a wall demarcation to transition to a floor demarcation at doors other than the exit discharge. Fire doors have not been evaluated with demarcations applied and maintaining the integrity of the fire door is paramount to safe egress.

1011.6.1.5 The illumination provisions of photoluminescent products have been relocated from 1011.6 to this new subsection to provide additional clarity to the code.

Commenter's Reason (Bella): As the proponent of E85-06/07, a submittal calling for egress path markings, I throw my support behind the modified application for E84-06/07 and drop my earlier proposal. At the code hearings last September in Orlando, the Means of Egress Committee directed the proponents of a number of similar proposals for egress path markings to work together and develop a balanced code proposal. The public comment submitted by William Connolly is the product of all of the applicants working together to create a comprehensive proposal. While major life safety improvements would be made with the requirement of floor proximity egress path markings in more occupancy types, without limitation of building height, I believe that high rise exit stairwells is is a step in the right direction and represents a significant milestone in the International Code Council's efforts to improve life safety. Therefore, I urge members of the International Code Council to vote in favor of E84 as modified.

Commenter's Reason (Muniz): This comment is the same as that submitted by the International Code Council Ad Hoc Committee on Terrorism Resistant Buildings, the proponents of E84. The Photoluminescent Safety Association wants to go on record as supporting non-technology specific IBC requirements for floor proximity egress path marking systems.

It should be noted that E84 06/07 has the support of the National Association of State Fire Marshals (NASFM).

Commenter's Reason (Watson): Ecoglo fully supports the collaborative effort by the original proponent, William M. Connolly representing the International Code Council Ad Hoc Committee on Terrorism Resistant Buildings, Bob Eugene, Underwriters Laboratories, and Vincent "VJ" Bella, Retired State of Louisiana State Fire Marshal, which resulted in the recommended new text copied above.

Public Comment 2:

James P. Colgate, RA, Esq., Executive Architect, New York City Department of Buildings, requests Approval as Modified by this public comment.

Modify proposal as follows:

403.15 Exit path markings. Exit path markings shall be provided in accordance with Section 1027 ~~1011.6~~.

1027 EXIT PATH MARKINGS

1027.1 General. ~~1011.6 Photoluminescent exit path markings:~~ ~~Photoluminescent~~ Approved luminous ~~exit path~~ markings delineating the exit path ~~(outlining stripes) complying with UL 1994~~ shall be provided in exit enclosures, including vertical exit enclosures and exit passageways, of buildings of Group A, B, E, I, M, and R-1 ~~with~~ having occupied floors ~~greater~~ located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access and shall comply with Sections 1027.1.1 through 1027.1.7. ~~Exit stairways where photoluminescent exit path markings are required shall be continuously illuminated and lighting shall not be controlled by motion sensors or timers.~~

Exception: Exit path markings shall not be required in lobbies or areas of open parking garages, where such lobby or area is located on the level of exit discharge and complies with the exception to Section 1023.1.

~~**1011.6.1 Markings (outlining stripes) within vertical exits:** Markings within vertical exits shall comply with Section 1011.6.1.1 through Section 1011.6.1.4.~~

1027.1.1 ~~1011.6.1.1~~ Steps.: ~~Outlining~~ A stripe~~s~~ shall be applied to the horizontal leading edge of each step and shall extend for the full length of the step. Outlining stripes shall have a minimum horizontal width of 1 inch (25 mm) and a maximum width of 2 inches (51 mm). The leading edge of the stripe shall be placed at a maximum of ½ inch (13 mm) from the leading edge of the step and the stripe shall not overlap the leading edge of the step by not more than ½ inch (13 mm) down the vertical face of the step.

1027.1.2 ~~1011.6.1.2~~ Landings: The leading edge of landings ~~in exits~~ shall be marked with ~~outlining~~ a stripe~~s~~ consistent with the dimensional requirements for steps ~~and shall be the same length as and consistent with the stripes on the steps or shall extend the full length of the leading edge of the landing~~.

1027.1.3 ~~1011.6.1.3~~ Handrails: All handrails and handrail extensions shall be marked with a stripe having a minimum width of 1 inch (25 mm). The stripe shall be placed on the top surface of the handrail for the entire length of the handrail, including extensions and newel post caps. Where handrails or handrail extensions bend or turn corners, the stripe shall not have a gap of more than 4 inches (102 mm).

1027.1.4 ~~1011.6.1.4 Floor p~~Perimeter demarcation lines ~~stripes~~: Stair landings and other ~~parts of the~~ floor areas within exit enclosures ~~egress path~~, with the exception of the sides of steps, shall be provided with demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 1 (25 mm) to 2 inches (51 mm) wide with interruptions not exceeding 4 inches (102 mm).

1027.1.4.1 ~~1011.6.1.4.1~~ Floor mounted demarcation lines: Perimeter demarcation lines shall be placed within ~~4~~ inches of the wall and shall extend to within 2 inches (51 mm) of the markings on the leading edge of landings. The demarcation lines shall continue across the floor in front of all doors.

Exception: Demarcation lines shall not extend in front of exit doors that lead out of an exit enclosure and through which occupants must travel to complete the exit path.

1027.1.4.2 ~~1011.6.1.4.2~~ Wall mounted demarcation lines: Perimeter demarcation lines shall be placed on the wall with the bottom edge of the stripe ~~wall~~ no more than 4 inches (102 mm) above the finished floor. At the top or bottom of the stairs, demarcation lines shall drop vertically to the floor within 2 inches (51 mm) of the step or landing edge. Demarcation lines on walls shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path. Where the wall line is broken by a door, ~~D~~demarcation lines on walls shall continue across the face of the ~~all~~ door~~s~~ or ~~may~~ transition to the floor and extend across the floor in front of such door~~s~~.

Exception: Demarcation lines shall not extend in front of exit doors that lead out of an exit enclosure and through which occupants must travel to complete the exit path.

1027.1.4.3 Transition. Where a wall mounted demarcation line transitions to a floor mounted demarcation line, or vice-versa, the wall mounted demarcation line shall drop vertically to the floor to meet a complimentary extension of the floor mounted demarcation line, thus forming a continuous marking.

1027.1.5 Uniformity. Placement and dimensions of markings shall be consistent and uniform throughout the same exit enclosure.

1027.1.6 Materials. Luminescent exit path markings shall be permitted to be made of any material, including paint, provided that an electrical charge is not required to maintain the required luminance. Such materials shall include, but not limited to, self-luminous materials and photoluminescent materials. Materials shall comply with either:

1. UL 1994, or
2. ASTM E 2072, except that the charging source shall be 1 fc (10 lux) of fluorescent illumination for 60 minutes, and the minimum luminance shall be 5 milicandelas per square meter after 90 minutes. **1027.1.7 Illumination.** Exit enclosures where photoluminescent exit path markings are installed shall be provided with the minimum means of egress illumination required by Section 1006 for at least 60 minutes prior to periods when the building is occupied.

1027.1.7 Illumination. Exit enclosures where photoluminescent exit path markings are installed shall be provided with the minimum means of egress illumination required by Section 1006 for at least 60 minutes prior to periods when the building is occupied.

Chapter 35 (IFC Chapter 45):
UL
UL 1994-04 Luminous Egress Path Marking Systems, with revisions through February, 2005

ASTM
ASTM E 2072-04 Standard Specification for Photoluminescent (Phosphorescent) Safety Markings

Commenter's Reason: The Means of Egress Committee agreed that the intent of the provision has merit. However, because of the great number of similar proposals, the committee asked that the various proponents work together to resolve the issues. This comment amends the text from proposal E84 and draws on the standards of proposal E142. Among other recommendations, the Means of Egress Committee requested that the revised proposal be "technology neutral."

"TECHNOLOGY NEUTRAL": A fundamental characteristic of good governmental regulation is that, to the extent possible, it does not specify particular technologies, so that competition and innovation are fostered. However, the issue of technological neutrality must not be confused with the sensible restriction of materials proven to be inappropriate to a particular fire and life safety requirement. Electrically-based exit path systems are good systems that can provide much brighter luminance than photoluminescent materials, and are very useful in the right applications. However, we need to ask why we are requiring exit path markings in high-rise stairways, and whether electrically-based systems are appropriate for this specific code requirement.

For high-rise buildings, the IBC already requires electrical back-up to both exit lighting and those smokeproof enclosures that utilize mechanical means. So in an emergency condition where the backup power operates as designed, the stairs will remain lighted and smokeproof, rendering the exit path markings of limited utility. The real import of exit path markings is to provide a safe system of way-guidance in the dark, i.e. when even the backup power fails.

The lessons learned from the 1993 terrorist bombing of the World Trade Center resulted in many upgrades to the complex, including the installation of luminous exit path markings in the exits. The markings installed were photoluminescent, which meant that once the ambient lighting was removed, they will remain luminous without any additional electrical charge.

On 9/11, these exit path markings were put to use, and were later credited by NIST as a feature that aided the evacuation of the towers. The water in the stairs from the sprinklers did not affect the photoluminescent makings because there was no electrical wiring or circuitry to get wet or short-circuit. The explosion and vibration did not affect the photoluminescent markings because there were no wires or circuits to sever. The fire and heat on the upper floors did not affect the photoluminescent markings on the lower floors since there were no wires or circuits to melt or burn. On 9/11, the exit path markings worked, unlike other, electrically-based features that failed that day, because the photoluminescent markings did not rely on electricity, alarms, wires, or circuitry.

The extensive experience that the New York City Department of Buildings has had with egress failures in high rise buildings underscores this point. We are responsible for approximately 8,000 high rise buildings. When the August 2003 Northeast power grid blackout hit New Your City, many of our high-rise buildings' emergency exit lighting systems failed, including in the municipal office building in which I work. Most of the failures stemmed from faulty maintenance of batteries or generators, and in some cases from improper installations. But the fact is that many people, including me and my staff, were left wholly in the dark.

New York City took the lead in this area and, pursuant to its in-depth Report of the World Trade Center Building Code Task Force, enacted a local law in 2004 requiring exit path markings that do not rely on electricity, despite objections from the electroluminescent industry. The local law requires photoluminescent exit path markings to be installed retroactively in all of our approximately 1,700 existing high-rise office buildings.

To argue that electrically-based path making must be permitted in this code change, in the name of technological neutrality, is thus incorrect. Rather, what we must do as code officials charged with protecting the public is to distinguish between "technology neutral" and "technology appropriate." New York City's assessment is that electrically-based exit path systems in high rise buildings that already have backup power and smokeproof enclosures is not the appropriate technology. What is appropriate is a system of luminous markings that do not rely on an electrical charge, which is what this comment, if approved, would require.

OTHER COMMENTS:
1. **Section 403.13.** The only modification here is to point the user to the new section 1027.
2. **Section 1011.** The original proposal would have appended the requirements for exit path markings to Section 1011, which currently deals only with exit signs – i.e. the signs placed above doors and near the ceiling directing people to exits. Rather than complicate Section 1011 with an unrelated new concept of path markings to be located only within enclosed exits, a new Section 1027 is added to include all the low-location exit path markings. This now neatly divides the two topics, similar to New York City's local modifications to the IBC. Therefore, the title of Section 1011 reverts to the current IBC text; all exit path markings are relocated to Section 1027.

3. **Section 1027.1 (formerly 1011.6).** The term "outlining stripes" is deleted because of possible confusion with the subsequent term "demarcation lines"; instead, the phrase "delineating the exit path" is added, as requested by the Means of Egress Committee to clarify what the markings are intended to do. The text of the original proposal would have required exit path markings for the entire "exit path" or "egress path", which could include all portions of the means of egress including exit access – and would therefore have been too broad a requirement. The Means of Egress Committee recommended modifying the proposal in application only to the "enclosed exit stairway". But only the enclosed exit stairway would have been too narrow, since it would not have included enclosed transfer exit passageways – the marking of which was deemed important by the WTC Building Code Task Force. Therefore, the phrase "exit enclosures, including vertical exit enclosures and exit passageways" is added to specify where in the high rise building exit path markings are required, and make clear that exit access corridors are not included. For organizational improvement, the requirements for materials (reference standards) and lighting are relocated to Sections 1027.1.6 and 1027.1.7. Group A and I occupancies are added in response to concerns expressed by the Means of Egress Committee; the nature of these occupancies, and the occupants' lack of familiarity with the exits, justifies the safeguards as a minimum requirement. In addition, an exception is added to exempt lobbies at the level of exit discharge.
4. **Former section 1011.6.1.** Due to the simplified organization, the scoping provisions formerly contained in section 1011.6.1 are now incorporated in to Section 1027.1. Therefore, the former section 1011.6.1 is deleted.
5. **Section 1027.1.1 (formerly 1011.6.1.1).** The term "outlining stripes" is deleted because of possible confusion with the subsequent term "demarcation lines". The minimum 1" width is maintained, as it is crucial to achieve minimum visibility for the visually impaired, and follows established 1" minimum standards (e.g., ASTM E 2072-04 and NYC RS 6-1). The 2" maximum width is crucial to prevent the visual illusion that occurs in the dark when overly-thick markings on the various steps merge into one glowing object; the 2" maximum follows an established requirement (e.g., NYC RS 6-1). The maximum ½" overlap is important to prevent confusion in the dark by making clear to the occupant what represents the top plane of the steps, following an established minimum requirement (e.g., NYCRS 6-1).
6. **Section 1027.1.2 (formerly 1011.6.1.2).** The term "outlining stripes" is deleted because of possible confusion with the subsequent term "demarcation lines". The word "exit" is removed because this idea is already provided for in the scoping provisions for Section 1027.1. The last phrase is removed as it is redundant.
7. **Section 1027.1.3 (formerly 1011.6.1.3).** The minimum 1" width is maintained, as it is crucial to achieve minimum visibility for the visually impaired, and follows established 1" minimum standards (e.g., ASTM E 2072-04 and NYC RS 6-1).
8. **Section 1027.1.4 (formerly 1011.6.1.4).** As requested by the Means of Egress Committee, the proposal is modified to be specific that it only applies to the exit enclosures. The minimum 1" width is maintained, as it is crucial to achieve minimum visibility for the visually impaired, and follows established 1" minimum standards (e.g., ASTM E 2072-04 and NYC RS 6-1).
9. **Section 1027.1.4.1 (formerly 1011.6.1.4.1).** An exception is added to clarify that markings shall not extend in front of discharge doors.
10. **Section 1027.1.4.2 (formerly 1011.6.1.4.2).** A clarification is added indicating from where the 4" measurement is taken. This will allow the stripe to be placed above a standard 3 ½ -inch base molding, while still keeping the stripe low enough to signify to the occupant that it represents the intersecting planes of the wall and the floor. In tests conducted by NYC prior to the establishment of its RS 6-1, luminescent markings that were placed too high on the wall caused occupants to be unable to discern in the dark where the floor was. Language is added to clarify the two options for marking the door – either across the door or on the floor in front of it. An exception is added to clarify that markings shall not extend in front of discharge doors.
11. **Section 1027.1.4.3.** Clarifies ambiguous language in the former Section 1016.6.1.4. The new language makes clear that the owner has the option of wall-mounted or floor-mounted stripes, and that the stripes may transition from one to the other.
12. **Section 1027.1.5.** Clarifies that the placement and dimensions must be uniform.
13. **Section 1027.1.6.** Relocates the technical requirements for the materials to this section for organizational improvement. ASTM E 2072 is added as an option, in addition to UL 1994. (Note that ASTM E 2072 had been specified in Proposal E 142 by David Frable, US GSA, and was found to comply with ICC Council Policy #28). The original E84 proposal provided UL 1994 as the only standard. However, UL 1994 does not recognize the use of photoluminescent paints, which the New York City Department of Buildings has found an important type of product to achieve safe results and avoid tripping hazards, particularly in retrofits where the substrate is more likely to be uneven. ASTM E 2072 permits photoluminescent paints, and is therefore added for technological neutrality, in accordance with the comments of the Means of Egress Committee. The addition of ASTM E2073 as an option pulls together the proposals E84 and E142. The charging source for ASTM E 2072 has been changed to 1 footcandle with 5 mcd/m^2 to be consistent with the means of egress illumination requirements of IBC Section 1006.2.
14. **Section 1027.1.7.** The illumination provisions for photoluminescent products have been relocated from 1011.6 to this new subsection to provide additional clarity.

A note about New York City's Reference Standard RS 6-1. The International Code Council's Ad Hoc Committee on Terrorism-Resistant Buildings' proposal for E84 was based in large part on NYC's RS 6-1, and there are therefore many references to NYC RS 6-1 in this comment. The NYC RS 6-1 was developed by the New York City Department of Buildings' architects and engineers after over one year of research of all available relevant standards, including but not limited to those published by the ASTM, UL, ISO, IMO, APTA (American Public Transportation Association). In addition, the department performed outreach and consultation with the various industries, including those from overseas. The Buildings Department also inspected mock-up/test installations of luminescent markings in various permutations, with different placement and dimensional configurations, to ensure that the resulting standards were adequate and appropriate. The result of all this research was a draft standard that was published for public comment – the public hearing on the proposal drew over 80 attendees representing a wide range of egress and safety experts. As a result of the public comment, the draft standard was refined and published in final form on May 31, 2005. Since then over 1000 installations have been completed in high rise buildings pursuant to this standard. It is on the basis of this experience that this comment is being made.

Bibliography:

1. ASTM E 2072-04, Standard Specification for Photoluminescent (Phosphorescent) Safety Markings
2. National Institute of Standards and Technology. Final Report of the National Construction Safety Team on the Collapse of the World Trade Center Towers. United States Printing Office: Washington, DC. September 2005.
3. City of New York, Department of Buildings. Building Code Reference Standard RS 6-1 and 6-1A (available at http://www.nyc.gov/html/dob/downloads/pdf/rs_6-1.pdf). Promulgated May 31, 2005.
4. City of New York, Department of Buildings. Word Trade Center Building Code Task Force: Findings and Recommendations (available at http://home2.nyc.gov/html/dob/downloads/pdf/wtcbctf.pdf). February, 2003.
5. City of New York. Local Law 26 of 2004, Section 15, modifying Building Code Section 27-283 (available at http://www.nyc.gov/html/dob/downloads/bldgs_code/locallaw26of04.pdf). Enacted May 24, 2004.
6. UL 1994-04, Luminous Egress Path Marking Systems, with revisions through February, 2005.

Cost impact: The statements made by the original proponent of E84 about the cost impacts are not affected by the amendments proposed herein.

Public Comment 3:

Dave Frable, U.S. General Services Administration/Public Buildings Service, requests Approval as Modified by this public comment.

Modify proposal as follows:

403.15 Exit path markings. Exit path markings shall be provided in exit enclosures in accordance with Section 1011.6.

1011 EXIT SIGNS AND EXIT PATH MARKINGS

1011.6 ~~Photoluminescent e~~Exit path markings. ~~Photoluminescent~~ Where required, exit path markings (~~outlining stripes) complying with UL 1994~~ shall be provided in exit enclosures of buildings with an occupancy in ~~of~~ Group A, B, E, I, M, and R-1 and shall comply with Sections 1011.6.1 through 1011.6.6. ~~with occupied floors greater than 75 feet above the lowest level of fire department vehicle access. Exit stairways where photoluminescent exit path markings are required shall be continuously illuminated and lighting shall not be controlled by motion sensors or timers.~~

~~**1011.6.1 Markings (outlining stripes) within vertical exits.** Markings within vertical exits shall comply with Section 1011.6.1.1 through Section 1011.6.1.4~~.

1011.6.1 Steps. ~~Outlining stripes shall be applied to the horizontal leading edge of each step and shall extend for the full length of the step. Outlining stripes shall have a minimum horizontal width of 1 inch (25 mm) and a maximum width of 2 inches (51 mm). The leading edge of the stripe shall be placed at a maximum of ½ inch (13 mm) from the leading edge of the step and the stripe shall not overlap the leading edge of the step by not more than ½ inch (13 mm) down the vertical face of the step~~. A marking stripe shall be applied to or be a material integral with each step and shall be installed along the horizontal leading edge of the step. The marking stripe shall be installed as follows:

1. The marking stripe shall be no more than ½ inch (13 mm) from the leading edge of each step.
2. The marking stripe shall have a minimum horizontal width of 3/8 inch (10 mm).
3. The horizontal width of the marking stripe shall be consistent on each step.
4. The length of the marking stripe along the horizontal leading edge of the step shall be consistent on each step.
5. The marking stripe shall be permitted to terminate within 6 inches (152mm) from each side of the step provided this configuration is consistent on each step

1011.6.2 Landings. The leading edge of landings ~~in exits~~ shall be marked with ~~outlining~~ a stripe~~s~~ consistent with the dimensional requirements for steps and shall be the same length as and consistent with the stripes on the steps ~~or shall extend the full length of the leading edge of the landing~~.

1011.6.3 Handrails. ~~All handrails and handrail extensions shall be marked with a stripe having a minimum width of 1 inch (25 mm). The stripe shall be placed on the~~ upper top surface of the handrail for the entire length of the handrail, including extensions and newel post ~~caps. Where handrails or handrail extensions bend or turn corners, the stripe shall not have a gap of more than 4 inches (102 mm)~~. All handrails and handrail extensions shall be marked with a stripe and comply with the following:

1. The marking stripe shall be applied to the upper surface of the handrail or be a material integral with the upper surface of the handrail for the entire length of the handrail, including extensions.
2. The marking stripe shall have a minimum horizontal width of 3/8 inch (10 mm).
3. The horizontal width of the marking stripe shall be consistent on each handrail.

1011.6.4 Lighting control devices. Lighting control devices that automatically turn exit enclosure lighting on and off based on occupancy shall not be installed where photoluminscent exit path markings are installed.

1011.6.5 Standard. Exit path markings shall comply with U.L. 1994.

1011.6.6 Instructions. Exit path markings shall be installed in accordance with the manufacturer's instructions.

~~**1011.6.1.4 Floor perimeter demarcation stripes:** Stair landings and other parts of the egress path, with the exception of the sides of steps, shall be provided with demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 1 (25 mm) to 2 inches (51 mm) wide with interruptions not exceeding 4 inches (102 mm).~~

~~**1011.6.1.4.1 Floor mounted demarcation lines:** Perimeter demarcation lines shall be placed within 4 inches of the wall and shall extend to within 2 inches (51 mm) of the markings on the leading edge of landings. The demarcation lines shall continue across the floor in front of all doors.~~

~~**1011.6.1.4.2 Wall mounted demarcation lines:** Perimeter demarcation lines shall be placed on the bottom edge of the wall no more than 4 inches (102 mm) above the finished floor. At the top or bottom of the stairs, demarcation lines shall drop vertically to the floor within 2 inches (51 mm) of the step or landing edge. Demarcation lines on walls shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path. Demarcation lines on walls shall continue across the face of all doors or may transition to the floor and extend across the floor in front of such doors.~~

UL
UL 1994-04 Luminous Egress Path Marking Systems, with revisions through February, 2005

Commenter's Reason: As the proponent of a similar code change proposal (i.e., E142-06/07) regarding this subject matter, I am submitting this comment to address the concerns raised by the Means of Egress Code Committee. Overall, the Means of Egress Code Committee agreed that the intent of the proposal E84-06/07 had merit but disapproved the code change based on a number of issues. The main reason being that the proposal should be "technology neutral". The purpose of this modified code change is to address issues raised by the Means of Egress Code Committee and to improve the visibility of stair treads and handrails under normal and emergency conditions in high-rise buildings. Many building occupants have common visual impairments such as low vision and this proposed change will help those individual's navigating stairs. We believe that the IBC should provide minimum requirements for when exit path markings are installed in high-rise buildings. Currently, the IBC does not address exit path markings. However, more and more jurisdictions (e.g., New York City, Washington DC, GSA, etc.) are requiring exit path markings that may or may not provide a safety benefit depending on the type of product used or how the product is installed. We believe the code change recommendations we have proposed to E84-06/07 provides minimum requirements for all exit path marking products utilized to ensure a reasonable degree of safety is provided when exit path markings are installed in exit enclosures.

403.15 Exit path markings. This paragraph was revised to clarify that exit path markings are to be installed in exit enclosures.

1011.6 Exit path markings. This paragraph has been revised to be "technology neutral" and to provide clarification.

1011.6.1 Markings (outlining stripes) within vertical exits. This paragraph was deleted since it is redundant to the text in 1011.6.

1011.6.1 Steps. This paragraph was revised to clarify the dimensional and location requirements for stripes on steps. First, we have clarified that the stripe being applied to the horizontal edge of each step does not need to extend the full length of the step (i.e., it need not extend within 6 inches of each side of the step). This is based on research conducted by Jake Pauls during observations of evacuation drills in high-rise buildings. Pauls's observed that people sway laterally and never place their feet on stair treads within 6 inches of a wall. Therefore, in a typical 44 inch stair, the area of tread use by the occupants descending the stair would be 32 inches and not the entire length of the tread. (See SFPE Handbook of Fire Protection Engineering, 3rd edition for additional information). Secondly, even though we recognize that UL 1994 requires human observations to determine whether the markings are suitably visible and therefore there is no need technically to specify a minimum marking width (because if it is too small it will not pass the visibility test); we still feel there is an expectation that a minimum width be specified. We feel that specifying a minimum width will not only ensure visibility in dark conditions but will also provide consistency and standardization in the enforcement of exit path markings. The minimum horizontal width of 3/8 inches is based on a 2006 study conducted by Dr. Thomas Schell of the University of Iowa, titled "A Human Factors Evaluation of Luminance Requirements Prescribed in ASTM E2072-04 for Continuous Photoluminescent Markings". The study concluded that marking widths as narrow as 3/8 inches, through human visibility testing, are suitable to use.

1011.6.2 Landings. This paragraph has been revised for clarification purposes only.

1011.6.3 Handrails. This paragraph was revised to clarify the dimensional and location requirements for stripes on handrails. Even though we recognize that UL 1994 requires human observations to determine whether the markings are suitably visible and therefore there is no need technically to specify a minimum marking width (because if it is too small it will not pass the visibility test); we still feel there is an expectation that a minimum width be specified. We feel that specifying a minimum width will not only ensure visibility in dark conditions but will also provide consistency and standardization in the enforcement of exit path markings. The minimum horizontal width of 3/8 inches is based on a 2006 study conducted by Dr. Thomas Schell of the University of Iowa, titled "A Human Factors Evaluation of Luminance Requirements Prescribed in ASTM E2072-04 for Continuous Photoluminescent Markings". The study concluded that marking widths as narrow as 3/8 inches, through human visibility testing, is suitable to use.

1011.6.4 Lighting control devices. The illumination provisions of photoluminescent products have been relocated from 1011.6 to this new subsection to provide additional clarity to the code.

1011.6.1.4 Floor perimeter demarcation stripes. This paragraph was deleted. No technical information has been provided that justifies the need for additional floor perimeter demarcation lines/stripes in the exit enclosure if the steps, landings, and handrails are provided with exit path markings.

1011.6.1.4.1 Floor mounted demarcation lines. This paragraph was deleted. No technical information has been provided that justifies the need for additional floor perimeter demarcation lines/stripes in the exit enclosure if the steps, landings, and handrails are provided with exit path markings.

1011.6.1.4.2 Wall mounted demarcation lines. This paragraph was deleted. No technical information has been provided that justifies the need for additional floor perimeter demarcation lines/stripes in the exit enclosure if the steps, landings, and handrails are provided with exit path markings. In addition, placement of exit path markings on a wall, particularly on landings, will lead one to perceive the bottom step in a flight of steps as the landing; thus causing a tripping hazard and the ability to use stairs efficiently in conditions of egress.

Final Action: AS AM AMPC ____ D

E87-06/07
1012.3 (IFC [B] 1012.3)

Proposed Change as Submitted:

Proponent: David W. Cooper, Stairway Manufacturers' Association

Revise as follows:

1012.3 Handrail graspability. All required handrails shall be of one of the following types or provide equivalent graspability.

Type I. Handrails with a circular cross-section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm) ~~or shall provide equivalent graspability~~. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (160 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Type II. Handrails with a perimeter greater than 6.25 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of .75 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least .3125 inch (8 mm) within .875 inch (22 mm) below the widest portion of the profile. This required depth shall continue for at least .375 inch (10mm)to a level that is not less than 1.75 inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1.25 inches (32 mm) to a maximum of 2.75 inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Reason: The purpose of the change is to add new requirements to the code. This proposal will allow the use of additional types of rails now restricted from the code. Other types of rail have been proven to be equivalent to, or better than those currently allowed.

The handrail shape description that is proposed for Type II handrails has been developed by independent researchers retained by the SMA to investigate graspability of handrails. Acting without specific mandate from SMA, these researchers developed and implemented tests, experiments, and analyses that revealed stairway fall kinematics, the forces that stairway users exert on handrails during falls, and the forces that persons in the general population can exert on handrails of various shapes.

Specifically, through a collaborative effort with researchers at the University of Toronto, the primary researchers – engineers with Simpson Gumpertz & Heger Inc. – conducted tests with human subjects to determine forces exerted on handrails. During these tests, test subjects stood on an activated stairway in postures and positions that represent those of a descending stairway user. Then, the stairway was induced to move forward and then suddenly stopped to cause the test subjects to lurch forward. By setting certain test parameters and through the introduction of barriers that prevented the test subjects from recovering, test subjects fell forward while attempting to arrest their fall by grabbing a handrail. During these tests, the researchers measured the forces exerted on the handrail and monitored the movements of the test subjects to understand fall kinematics.

To account for the broad variation in human stature, the researchers used a computer program, calibrated against the Toronto tests with live subjects, to extrapolate those test results to determine forces generated on handrails by persons representing the distribution within the population.

In a separate set of tests, the researchers investigated forces that persons can exert on handrails of various shapes. For these studies, the researchers developed test apparatus that allowed test subjects to grasp segments of handrails, which were then pulled by a motor out of the test subjects' grasp while forces were recorded. The test subjects were in a seated position (which represents a position that is similar to the posture that persons falling on stairways attain at the time they are exerting maximum arresting force on handrails), and forces were measured in three orthogonal directions: transverse, perpendicular upward, and longitudinal relative to the rail. Hundreds of tests were performed with dozens of test subjects ranging in age from sub-adolescent to elderly.

These tests, experiments, and analyses evaluated round handrails and a broad range of dimensions of handrails that are not round. With the results of these studies, the researchers conducted statistical analyses to determine the proportion of the population that would likely not be able to maintain a grasp on handrails of various shapes during a fall. Using this method, the researchers determined which shapes are graspable (meaning, at least as likely as round handrails to be secure handholds in actual fall scenarios). These statistical analyses showed that Type II handrails have graspability that is essentially equal to or greater than the graspability of handrails meeting the long-accepted and codified shape defined in this proposal as Type I (essentially round handrails, of common size).

The key feature of the graspability of Type II handrails is graspable finger recesses on both sides of the handrail. These recesses allow users to firmly grip a properly proportioned grasping surface on the top of the handrail, ensuring that the user can tightly retain a grip on the handrail for all forces that are associated with attempts to arrest a fall. In addition, Type II handrails have been shown to more than serve adequately for "guidance and support" as required by codes.

The research conducted by these independent researchers validates experience with handrails in service. Handrails meeting the Type II definition have been in service for perhaps hundreds of years without documentation that there is any deficiency in their functional characteristics. Indeed, some handrails conforming to the Type II definition perhaps are among the most common shapes presently used in the United States. Furthermore, by adopting the definition of Type II handrails in the IBC, we will be positively excluding from use a wide spectrum of handrail shapes that also are in common use, but do not meet the standard for graspability that has led to this proposal. With the adoption of this proposal, much of
the uncertainty about what constitutes "equivalent graspability" will be removed, since a specific definition of acceptable alterative shapes will be introduced and codified.

The Type II definition has been expressly included in the IRC for five years. During that time, this shape definition has become a standard for determining the suitability of handrail shapes, even in jurisdictions that have not adopted the IRC. Furthermore, the SMA is aware of no documentation that suggests that inclusion of the Type II definition in the IRC has in any way diminished safety of handrails.

The adoption of the Type II shape allows the use of viable, lower-cost, safe handrails. Without allowing Type II shapes, we run the risk that economical and fully functional handrail designs (including those of wood, which require closely-spaced supports which potentially interfere with the grasping surface of round handrails) will be unreasonably excluded from use, to the detriment of the population which is entitled to cost-efficient construction when it has been demonstrated to be safe. Acceptance of the Type II shape would once again permit the use of low-cost, renewable-resource handrail shapes, all but eliminated as an option for the jurisdictions adopting the current IBC code.

In addition, the Type II shape allows for the development of new ergonomic profiles that could exceed the properties of the limited handrail options now allowed in the IBC. Such options would not only permit the design of profiles for those with impairments, unable to close their hand to grasp small round objects, but also would allow greater flexibility to the designer that must respond to the aesthetic preferences of the consumer, thereby encouraging long-term and committed compliance with code regulations.

The research and testing summarized above has been published and is available on the Internet as listed below in the bibliography. We believe that these landmark studies, sponsored by the SMA but performed by independent researchers, constitute the most thorough and legitimate research on handrail graspability performed anywhere in the world.

Bibliography:
Dusenberry, D.O., Simpson, H., DelloRusso, S.J., and Rao, R.S., "Evaluation of Graspability of Handrails During Falls on Stairs," Presented at the Proceedings of the 13th Conference of Engineering Mechanics, Baltimore, MD, 13-16, June, 1999. http://www.sgh.com/PDFs/Dusenberry.pdf

Maki, B.E. and Perry, S.D. (1996). "Influence of Handrail Design on Postural Stabilization: Pilot Phase." Report prepared for the Stairway Manufacturer's Association under contract to Simpson Gumpertz & Heger Inc., Arlington, MA. http://www.stairways.org/code_changes/Influence_HandrailDesign.pdf

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

Committee Action: Approved as Submitted

Committee Reason: The in depth study that was performed has proven that these Type II handrails should be allowed. The technical criteria in Type II handrails provide the 'equivalent graspability' previously permitted in the code. A concern was expressed about a potential conflict with ICC A117.1 and new ADA/ABA Accessibility Guideline requirements for no tight grasping, twisting and pinching. While the study did include a range of ages, it is not clear if any of the study participants were persons with disabilities.

Assembly Action: Disapproved

Individual Consideration Agenda

This item is on the agenda for individual consideration because an assembly action was successful and public comments were received.

Public Comment 1:

David W. Cooper, Stairway Manufacturers Association, requests Approval as Submitted.

Commenter's Reason: Although the committee approved this proposal "As Submitted" a floor action for disapproval was made and I will address the points noted by the proponents of the floor action. However we would ask you to carefully review the supporting statement of the original proposal and download the documentation of the extensive research supporting the proposal rather than repeat it here.

Coordination with A117.1:
The same research presented in the supporting statement has been formally presented to the A117.1 committee. The quality and technical merits of the research has been acclaimed as an exemplary example for code development in both the A117.1 Standard forum as well as on the floor of the CDH in Orlando. Based upon this research a similar change has been proposed to the A117 standard although it is yet to be determined as to whether the proposal will pass in the submitted form or some modification. That aside it is safe to say that IBC conflict or concurrence with the A117.1 is a continuous state of flux and coordination activity regardless of the issue. Coordination of these documents is a monumental task usually requiring the work of specific task groups. The ICC codes are on an 18-month cycle and the A117.1 standard is a 5year development cycle. It is rare that the code process does not lead the ANSI process often leading to many conflicts. To halt the progress of code development to wait for the ANSI process at the risk of wasting the potential of three or four years of experienced use makes no sense. Often the code process can and does effectively lead in the development of solutions before the ANSI process can ratify/modify them. This type of healthful "conflict" will always be inevitable if we are allowed to progress rather than be stifled. This particular issue is surely an occasion for IBC action to lead the way.

New ADA/ABA Requirements:
The concern for no tight grasping, twisting and pinching is exactly why larger profiles are needed. These larger Type II profiles do not require the same kind of grip and will allow another option for those that cannot close their hand tightly. Smaller profiles require a tighter closure of the hand in what has been termed the "power" grip requiring the closure of the hand around the object to allow the user to develop the maximum force. Contrary to this, Type II rails allow the user to develop the maximum force with a grip in a defined recess without wrapping the fingers under the rail and can develop the maximum force in some cases without the opposing thumb required to "pinch". It should also be said that Type I rails are not eliminated by this proposal but rather a much needed additional option will be provided that will benefit those that cannot close their hand tightly around smaller objects. I must point to the fact that many objects some as simple as aspirin bottles are now available with larger contoured caps for this very reason to actually meet the needs of many with disabilities. If twisting and pinching were an issue in the use of rails it only makes sense to apply the same wisdom to handrail grip options.

Testing Disabled Persons:
We simply do not know if the persons tested in the studies included any with disabilities as they were not recorded or identified to the researchers as such. Nor do we think that if specific persons with disabilities were tested that the results of this research would be different. There is no study of handrails either Type I or Type II that is specific to persons with disabilities. The research listed in the supporting information is a study of how a varied population age 10 - 83 with various grip strengths was able to use larger profiled rails compared to their use of Type I rails now allowed in the code. In every instance regardless of the relative ability or disability to grip according to each individual's strength the result was the same. Type II rails performed as well as Type I rail tested and currently allowed in the code. It would be expected that disabled persons will also have a range of grip strengths many comparable to those in the tests performed and regardless of their strength that their use of Type II rails would be comparable to Type I rails also.

Public Comment 2:

Todd Daniel, National Ornamental & Miscellaneous Metals Association, requests Approval as Submitted.

Commenter's Reason: The National Ornamental and Miscellaneous Metals Association (NOMMA) supports E87-06/07 and the Committee Action to approve as submitted. The data submitted in support of this change is some of the most thorough ever done on the subject of handrail graspability. In the absence of data indicating the adverse effects of permitting Type II Handrail shapes, the submitted research should be given significant weight in reaching a decision.

Public Comment 3

David W. Cooper, Stairway Manufacturers Association, requests Approval as Modified by this public comment.

Modify proposal as follows:

1012.3 Handrail ~~graspability~~ grip size. All required handrails shall be of one of the following types or provide equivalent graspability.

Type I. Handrails with a circular cross-section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm). If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (160 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Type II. Handrails with a perimeter greater than 6.25 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of .75 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least .3125 inch (8 mm) within .875 inch (22 mm) below the widest portion of the profile. This required depth shall continue for at least .375 inch (10mm)to a level that is not less than 1.75 inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1.25 inches (32 mm) to a maximum of 2.75 inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Commenter's Reason: This proposal identifies the dimensions of the grip size of the rail and has been previously titled *Grip Size* in the IBC rather than *Graspability*. It is currently in the IRC as *Grip Size*. Perhaps this would help to clarify the section and eliminate some of the debate as to "ability" or "disability" or other issues of nomenclature. For this reason although we support the committee's approval as submitted we also offer the following modification to the change in the title of the section.

Public Comment 4:

Jake Pauls, Jake Pauls, Consulting Services in Building Use and Safety, representing himself, requests Disapproval.

Commenter's Reason: Proposal E87-06/07 attempts to degrade the IBC with a badly flawed, poorly substantiated change that would permit handrails to be as dysfunctional, in arresting falls, as those currently permitted by the IRC. Because research has been so badly misrepresented in the proposal and by some testifying in the first hearing, and because such misrepresentation is pathological for a fair, technically sound code development process, an extraordinary degree of detail on what happened in the first hearing is provided in this comment. Such a careful examination offers important lessons about the importance, first, of handrails in stairway safety; secondly, of a thoughtful—indeed skeptical, detailed examination of research; and, thirdly, of honesty in a code-development process maintained by an organization with the vision, mission and values claimed by ICC at www.iccsafe.org.

Record of Testimony and Actions on ICC Code Change Proposal E87-06/07 on 9/27/06

Compiled by Jake Pauls, CPE, and including [IN UPPER CASE, IN BRACKETS] comments by Jake Pauls

Synopsis

Code Change Proposal E87-06/07, pertaining to ICC International Building Code (IBC) Section 1012.3, was submitted by David W. Cooper, Stairway Manufacturers Association (SMA). The proposal was debated before the Means of Egress Code Committee at the ICC public hearing in Lake Beuna Vista, FL, on September 12, 2006, between approximately 8:31 AM and 8:57 AM.

The proposal sought the addition of new text to IBC Section 1012.3 to permit "Type II" handrails which would permit a relatively common decorative railing section (designated as "6010" by the railing industry) to be used as a required handrail. (The International Residential Code, IRC, previously had been amended to permit such railings and another IBC change proposal, E88-06/07, was to recognize this IRC provision in the IBC.)

Proposal E87-06/07 received approximately 11 minutes of public testimony, punctuated in some cases with questions from Means of Egress Code Committee members. This was followed by approximately 3 1/2 minutes of Committee discussion and voting—to accept the proposal as submitted (AS). The Committee vote was 8 in favor of AS; 6 opposed. This led to Assembly Action (a challenge to the Committee vote) by Soy Williams, a member of the Committee, which led to an additional 8 minutes, approximately, of additional public testimony on a motion to Disapprove the proposal. Then approximately 3 1/2 minutes were taken up with a standing vote of all present; this vote supported the Disapproval motion by a vote of 81 to 79.

In a subsequent, much shorter consideration of a related item, E88-06/07, the Committee was deadlocked with a 7-7 vote on, respectively, Disapproval and Approval as Submitted. In each case the Committee Chairman voted to break the tie in favor of approval of the proposal.

Detailed Testimony on Proposal E87-06/07

Remarks shown here are not exact quotations but are very close (except where they have been paraphrased and presented in parentheses).

8:31 AM. In Support of Proposal

David Cooper, Stairway Manufacturers Association. This is a very important issue for us. In the early 1980s a study was done with ten males and ten females who reached out, standing on a stair, and grabbed a rail and pushed and pulled. From that sole study the legacy codes were influenced to allow only round rails. **[COMPLETELY WRONG. NONE OF THE FINAL EDITIONS OF THE THREE LEGACY CODES RESTRICTED HANDRAILS TO CIRCULAR SHAPES.]** Profiles were eliminated, however, the study itself even warned about this and suggested that further work needed to be done. It did not quantify what it was about the shape of round rails—it was a good study; there was some preference involved—but it didn't describe what it was about the rounds that contributed to their function. **[WRONG. THE BIOMECHANICS OF THE CIRCULAR SHAPE HAD ALREADY BEEN ADDRESSED IN DETAIL IN MAKI'S EARLIER REPORT, FROM 1983.]** The SMA, since that time, has done extensive research on profiles and our research involved the actual use of handrails on stairs. We had people stand on the stair and move the rail—or stop abruptly and fall and grab the rail and we measured the forces. **[CAREFUL WITH HOW SMA USES "WE." THAT STUDY WAS PERFORMED BY MAKI, PERRY AND MCILROY WITH SCIENTIFIC INDEPENDENCE OF, BUT WITH FUNDING THROUGH AN INTERMEDIARY FROM, SMA. SEE IMPORTANT NOTE ABOUT THIS IN THE REFERENCES.]**

We tested these rails amongst a much wider population of people. We determined a computer model from those tests that could extrapolate over an even larger population. This information has been presented to A117 with a similar proposal. We urge that you accept this. It's time to break away from old thought and accept the new research that's been made available to us. **[THIS RESEARCH IS NOT NEW. IT WAS COMPLETED IN 1996.]**

Ron Nixon, National Multi Housing Council. I was at the A117 Committee when this was presented and the researcher was there. I was impressed with the detail that they went on this and urge the Committee to give this serious consideration.

Don Davies, Salt Lake City, Utah, Chapter. The state of Utah has had a state amendment which looks like the same language that we see here for several years. We found that works really well. We've gotten several handrail samples of different handrails and we've measured them to the standard. We found that this really does work in real life. Thank you. **[THIS TESTIMONY SAYS NOTHING ABOUT ACTUAL PERFORMANCE OF SUCH RAILS.]**

8:34 AM. In Opposition to Proposal

Jerry Tepe, American Institute of Architects. Very mild opposition to the striking of the "or shall provide equivalent graspability." As you know, architects like to be innovative.

Marsha Mazz, U.S. Access Board. What hasn't been said is that A117 did not accept this proposal and, in addition, this does not comply with the current ADA standards or the revised ADA/ABA Accessibility Guidelines published by the U.S. Access Board. The type II handrail exceeds the maximum perimeter dimension established in the revised ADA and ABA Accessibility Guidelines and it provides for a pinching type of handrail as opposed to a graspable handrail which is important for accessibility for people with disabilities. And the tests were not conducted using people with mobility impairments or people who have any kind of impaired mobilities. So I think this is an important issue. It's one that I believe the Access Board would be open to some revision on if there were tests conducted using people with impaired mobility but we're not at that point so I urge that you not accept this change at this point in time.

Question from Committee Member Soy Williams. The research that's referenced by the proponents, did that in fact include people with disabilities that had graspability issues?

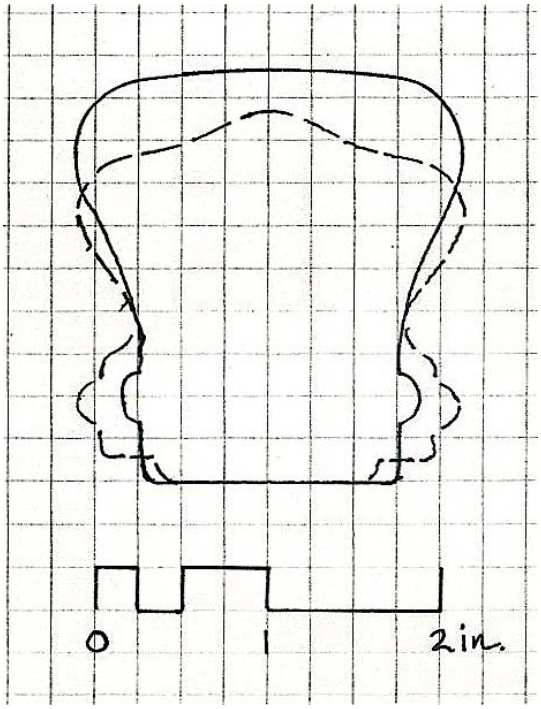
Marsha Mazz. I understand it did not.

8:26 AM. Rebuttal Testimony

David Cooper, Stairway Manufacturers Association. The study did include people as old as 83 years old. No, we did not study people with particular mobility impairments. We're open to studying that but our research in no way precludes those people from using these rails. The equivalent graspability is in the first sentence, the charging sentence. It was moved up there but I'm fine with leaving "or shall provide equivalent graspability" in that text. Thank you. **[OTHER THAN FOR THE WORK PERFORMED BY MAKI, ET AL., BETWEEN 1982 AND 1996—INCLUDING MAKI'S THREE STUDIES FOR JAKE PAULS AT NRC CANADA, THERE IS NO DEMOGRAPHIC DETAIL IN THE REPORTS REFERRED TO BY SMA. THE 1999 PUBLICATION FROM SMA'S CONSULTING FIRM, SGH, LACKED ALMOST ALL OF THE DETAIL TYPICALLY PROVIDED IN SCIENTIFIC REPORTS AND THE 1996 PAPER BY SGH WAS EVEN LESS DETAILED. ACCEPTANCE OF SUCH PAPERS IN SCIENTIFIC JOURNALS IS UNLIKELY.**

Question from Committee Member, David Frable. Did the results from Maki's preliminary report pertain to this type of handrail? You referenced Maki's 1996 preliminary report.

David Cooper. He tested round rails and profiles that were used in Canada. He did not use any profiles that were common to the U.S. market. **[WRONG. THE SINGLE DECORATIVE SHAPE STUDIED BY MAKI WAS MORE COMMON IN CANADA BUT THE OTHER 15 TESTED SHAPES WERE USED IN THE US. SEE FIGURE BELOW COMPARING ONE SHAPE MAKI STUDIED—IN BROKEN OUTLINE—WITH THE TYPE "6010" MORE COMMON AT THAT TIME IN THE US—SHOWN IN SOLID OUTLINE. BOTH SHAPES, ALLOWING ONLY A PINCH GRIP, MAKE POOR QUALITY HANDRAILS.]**



Question from Committee Member, Joseph Versteeg. You say in the study you used some elderly. Did you use any children in the study?

David Cooper. There was a wide population. I'm not sure about the youngest age. But, yes, there were children. **[NO EVIDENCE OF THIS IS PROVIDED IN THE REPORT. SEE PAULS, 2007, FOR ERGONOMIC INFORMATION ON CHILDREN AND RAILS.]**

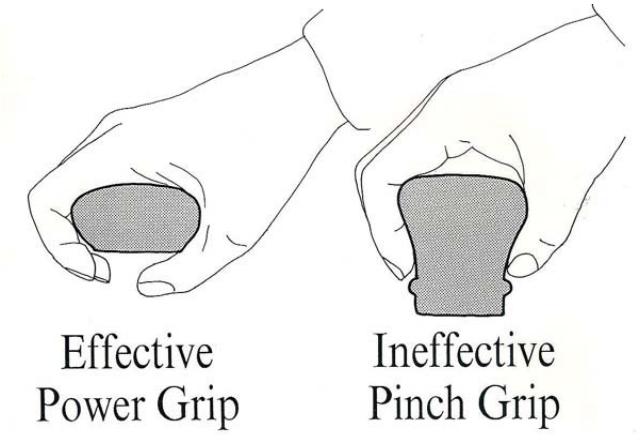
Question from unidentified Committee Member. Was this brought before the A117 Committee and was it rejected?

David Cooper. My understanding is it wasn't rejected yet. There was a preliminary vote. This is not a final rejection. I do have to say the research was received and lauded by those in attendance and, in particular, a therapist mentioned that they wanted this because it allowed them the opportunity to have other profiles that could be designed for people with impairments. Right now, all they have is a choice of round. **[TO REPEATEDLY CLAIM THAT ONLY A ROUND SHAPE IS ALLOWED IS COMPLETELY ERRONEOUS. ALSO, WHEN MAKI PERFORMED GRASPABILITY TESTING FOR PAULS AT NRC CANADA IN 1985, 12 OF THE 16 TESTED SECTIONS WERE NOT CIRCULAR. SEE APPENDED DIAGRAM AT END OF THIS COMMENT.]**

Ron Nixon, National Multi Housing Council. (A117 committee rejected it in first round of voting but not letter balloted yet.) It still has to go through another complete cycle. As to the ADAAG question, this information wasn't even available when they were working on the updating of those rules. **[FALSE. IT WAS.]** This is new research and the only new research done anytime in the last several years. I think it does give us another opportunity to look at our handrails and we should consider it.

Larry Perry, BOMA. Just a couple of points. First, I support this an approach to go and I've never quite understood why we truly care about the overall perimeter of the handrail. Your hand is only doing something up at the top part of it and as long as you've got the right profile which is what all this language attempts to do, if the overall depth of the handrail is thicker, it really doesn't matter. I too am a member of the A117 committee and sat through the presentation and it was by far the most comprehensive piece of research that's ever been brought forward to the Committee. **[WORKING ON THE A117 COMMITTEE AS LONG AS MR. PERRY, I DOUBT MR. PERRY IS CORRECT. ALSO, THE NEED TO GRASP UNDER AND COMPLETELY AROUND THE HANDRAIL WAS EXTENSIVELY ADDRESSED IN MAKI'S RESEARCH REPORTS GOING BACK TO THE 1980'S. AS WELL AS BEING AT THE HEART OF A POWER GRIP, IT REFLECTS THE VARIETY OF FORCES AND MOMENTS OPERATING IN A FALL-ARREST ACTIVITY USING A HANDRAIL. SEE IMPORTANT NOTE WITH MAKI ET AL., 1998, REFERENCE.]**

If you hold every change we've ever attempted to make in that standard to the level of research these guys did, we wouldn't have changed anything in the last ten years. I was rather shocked that, because we had such extensive research presented to us and explained the whole procedure they went through, it ended up getting shot down because people were than able to go in and try to pick holes in the process that was used in the research. It's the best research that I've ever seen presented in that forum. **["THESE GUYS" GET CREDIT FOR WORK NOT DONE.]**



Question from Committee Member, David Frable. I keep on hearing about this new technology and new research. Where's the dates? What's the date of the last study? Based on the reference, I see 1999. That's almost six years ago.

Larry Perry. I'll let the proponent better answer what kind of information you got on the studies.

David Collins, American Institute of Architects. Also a member of the A117 committee. I agree wholeheartedly with what Larry just said. It was an incredible piece of information to see. **[INDEED, IT WAS INCREDIBLE, BUT NOT IN A FAVORABLE SENSE.]** I wish you could have seen what we saw at the meeting. Contrary to many of the arguments that were brought up in A117, I don't think research with persons with graspability (sic) would have changed the results. These were relatively healthy people, I believe, that were all subject to a very strict set of criteria and they fundamentally performed all exactly the same way over and over and over. I don't think it would make a bit of difference. They probably would have had a less (sic) success rate with any of the rails based on the physical rigor that they were put through in a fall situation. **[THERE IS NO EVIDENCE FOR THESE EXAGGERATED CLAIMS.]** I urge your support of this.

Question from Committee Member Soy Williams. Dave, do you believe the existing language, "or shall provide equivalent graspability," under the current handrail criteria would allow the use of this type, these types or these types of handrails that have been mentioned according to what has been proposed?

David Collins. I don't know who uses what scale or what judgment to determine that. Based on this research I think it obviously does because it performs as well if not better then anything else. **[THIS CLAIM IS NOT CONSISTENT WITH THE AVAILABLE SCIENTIFIC EVIDENCE.]**

8:42 AM. Re-rebuttal testimony invited but none was given.

Committee Action
Motion for As Submitted by John Stovall (Rep. National Association of Home Builders)
I believe that the in depth study that was performed shows these type two railings should be allowed. **[THERE WAS NO "IN DEPTH" SCIENTIFIC STUDY SHOWING THIS.]**

David Frable. Mr. Chairman, I'll be voting against the motion on the floor. I was not at the presentation at the A117 committee where this beautiful presentation was presented. In addition the proponent still has not convinced me that this is an equivalent design as a round handrail. I also have concerns that it will then be in conflict with the ADA/ABA requirements.

Soy Williams. I also disagree with proponents that this research was not available at the time that the various editions of the ANSI standard and the ADA Accessibility Guidelines were going through review. If you look at the dates of the research, they were published in 1999 and 1996. Throughout those years the ANSI and the ADAAG revision process were happening. The new ADA/ABA guidelines were not published until the year 2004 with the final vote on them not being taken until that year.

Jim Seally. I too am going to speak against the motion on the floor. I disagree with eliminating the words "or providing equivalent graspability." I agree with Mr. Tepe that that's something that architects have used for years to be creative in their handrail design and still comply with graspability. I also think that there is a misunderstanding as to what graspability is. Some people are misunderstanding the ability to pinch a rail as being graspable.

Steve Thomas. Speaking in favor of the motion, I think the phrase "providing equivalent graspability" is in the charging sentence of this section so that this still provides us with that opportunity as well as provides some guidelines as to what that equivalent graspability is by providing the type two handrails. **[THEY DON'T HAVE EQUIVALENT GRASPABILITY.]**

Soy Williams. I also want to add one other thing, that Jim Seally brought up, in more detail. I think it would be in direct conflict with both the ANSI and the ADA requirements that prohibit tight pinching, grasping, twisting of the wrist, particularly with respect to pinching.

John Stovall. With regard to the conflict with the ADA, I believe someone has to change first.

8:46 AM. Committee vote; 8 in favor; 6 opposed. E87 approved as submitted.

Soy Williams asks for floor vote and is instructed to go to floor microphone if she wants to testify. Motion seconded and testimony in favor of motion (for disapproval) called.

Soy Williams. (Clarifies that motion is for disapproval.) I'm concerned that a statement was made that someone has to change first and that we would be creating a conflict between the IBC and the ADA accessibility requirements but also with the reference standard A117 because the reference standard has a requirement that says no tight pinching, grasping or twisting of the wrist are allowed in accessible elements. **[THE REQUIREMENT IN ADAAG AND A117.1 IS FOUND AT 309.4, "Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist."]**

Ed Roether with HOK. I'm not a member of the ANSI A117 committee but I did attend and there was very good study that was done but I was watching from the observance of an architect. What it proved to me is that no handrail works, period! And that was the justification for what he proposed.

Marsha Mazz. U.S. Access Board. Someone earlier , in their comment, said that the group of people studied were a group of healthy people. Yeh, and by and large they were. There were no people with disabilities used in the study, specifically no people with any hand disability, manual disabilities studied. The accessibility standard is written for people with disabilities and there is a very very clear distinction between the ability to form a power grip—using your whole hand and wrapping your hand around the handrail—and the need to pinch with just your finger tips. And the type two rail is a finger tip rail. It's not a rail that you can form a power grip on and use. That's why the Access Board rejected that type of handrail and we did have the ability to review that type of handrail. The type two rail is one that the Access Board rejected and we ask that the assembly reject that type of handrail. If further evidence comes out in the future that people with normal dexterity problems can use that type of handrail, then we'll re-evaluate at that time but we have no evidence of that. Thank you. **[SEE DIAGRAMS ABOVE ILLUSTRATING POWER GRIP AND INEFFECTIVE PINCH GRIP.]**

Jan Sokolnicki, State of Ohio. I really appreciate thorough research. I am impressed with what I have heard has taken place. However, in any state or jurisdiction where they've made an effort to try and avoid the possibility of conflicting requirements with what is mandated at the Federal level, this is going to be a conflict until after further research is done by the people to evaluate the impact on our objective to allow for comprehensive use of our building elements by people with disabilities. I think it's going to come of course, if people follow up on things. And the ANSI committee probably will eventually go through and find out that if there is flaws, what's to be done about it and I sure, with the extensive research that's done, that things will get fixed. The problem is, in the meantime, states like ours are faced with having to extract out those conflicts when we adopt the code. . . .

My suggestion is, it's OK to wait. Let the research complete itself and then take an action like this. Thank you.

8:51 AM. Opposition Testimony

Dave Collins, American Institute of Architects. In opposition to this change (sic). Understand the research had comparable railings to the design that is being proposed and the design that is mandated now. The performance was virtually the same. **[BUT THE TESTING DONE WITH THE "TYPE II" RAILING WAS SO RIDICULOUS AND DIVORCED FROM REAL HANDRAIL USAGE THAT THE PERFORMANCE MEASURES ARE COMPLETELY MEANINGLESS. SEE BELOW.]** So, graspability, pinching, power grasps didn't make any difference to persons that were fully or relatively healthy, without any disabilities whatsoever. **[WRONG.]** What would happen with persons with graspability problems? In my opinion, it would be a worse case situation with all of those circumstances because what we were measuring was the ability of the rail to prevent a fall. **[THE TESTING PERFORMED BY SGH STAFF FOR SMA DID NOT SIMULATE WHAT ACTUALLY HAPPENS IN A FALL SITUATION. THE SUBJECTS WERE SEATED WITH AN ARM STRETCHED OUT HORIZONTALLY ON A TABLE. THE UNREALISTIC NATURE OF THAT SET UP WAS UNDERLINED ON OCTOBER 13, 1994, WHEN MR . DAVID DACQUISTO, TESTIFYING FOR NAHB IN A CABO HEARING ON HANDRAIL RESEARCH, SAID, (Realistic testing) "is testing people who are using stairs, not testing people who are sitting in armchairs."]** When you do that, the body physics associated with what happens when you're in motion destroys your grip. You don't have a grip. It's gone almost instantaneously. And all you're left with is the ability to grasp with your fingers over the edge of the rail, no matter what the shape is. **[SEE THE REPORTS AND PAPERS BY MAKI FROM 1983, 1985, 1996 AND 1998 TO LEARN JUST HOW COMPLETELY WITHOUT SCIENTIFIC FOUNDATION MR. COLLINS' STATEMENTS ARE. DR. MAKI'S REPORTS FROM THE 1980s ARE OUT OF PRINT, BUT SCANNED PDFs ARE AVAILABLE BY EMAIL REQUEST TO JAKE PAULS.]**

David Cooper, Stairway Manufacturers Association. This testing was done in comparison with the performance of round rails, two-inch round rails. These profiles had comparable performance with that. **[BUT ONLY IN A COMPLETELY ARTIFICIAL TEST THAT HAD LITTLE OR NO RELEVANCE TO REAL FALLS.]** The term power grip comes from that first study of just ten males and ten females standing on a stair pushing and pulling a rail. **[WRONG. THE TERM GOES BACK AT LEAST THREE DECADES. SEE MAKI'S 1983 STUDY FOR SOME OF THE HISTORY OF STUDIES OF GRASPABILITY AND POWER GRIP.]** That's all they did. And that old thought, old technology needs to be reversed. **[THIS TALK OF "OLD TECHNOLOGY" IS SO SILLY. IT IS THE "TYPE II" RAIL THAT IS ACTUALLY OLD, TRADITIONAL TECHNOLOGY—IN USE LONG BEFORE THERE WAS A SCIENTIFIC APPRECIATION OF THE ROLE OF GRASPABILITY IN STAIR-RELATED FALLS. SEE MR. COOPER'S REMARKS IN THE EIGHTH PARAGRAPH OF HIS REASON STATEMENT.]** The latest research that's been done on this was done in preparation for the ANSI presentation. That information is being made available, we just got the notated copy and that will be made available to the entire ANSI committee. I urge the floor turn down this motion.

8:53 AM. Rebuttal testimony invited but none given.
Standing vote taken of assembly members.
8:56 AM. Results of vote count announced; motion for disapproval passes 81 to 70.
David Cooper asks for recount; Moderator says "no" and calls to the floor E88-06/07.

SUMMARY COMMENTS BY JAKE PAULS (shown here in regular, lower-case font)

My personal scientific library contains far more scientific literature on the human factors (ergonomics), including biomechanics, of handrails and stair-related falls than the proponents of the Type II railing are aware of or care to acknowledge. For example, there is the study by Hall, "Empirical Assessment of Handrail Diameters," from the Journal of Applied Psychology, 1956—over fifty years ago. Also, there is the excellent scientific review done for the Building Research Establishment in the UK in 1994 by some of my research colleagues, Feeney and Webber. Years ago, I made this report available within the model code change process (for legacy and ICC codes). In its conclusions, based on European and North American research, this critical, science-based review states: "Guidance that be provided with confidence is . . . the shape should be circular and of 32 to 50 mm diameter, or oval with a thickness of 18 to 37 mm

horizontally and 32 to 50 mm vertically." The largest recommended section with the oval shape was tested in 1985 by Maki in the research he performed for the National Research Council (NRC) of Canada, where I served as "Scientific Authority" for NRC on the study. The oval is an example of a non-circular shape that performed well in testing of both functionality and user preference.

It is distressing for someone like myself, with a 40-year research career to date, to see so many people who should know better make statements in an ICC hearing that depart so much from fact. It appears fairly clear, given the errors (as well as apparent general gullibility about research, especially biomechanics research) that few if any people involved with the testimony at ICC's hearing had even looked carefully, if at all, at the research reports. Unfortunately, for both the ICC hearings and for the ANSI A117 committee meeting in July 2006 (and I am a longstanding member of the A117 Committee), I was engaged elsewhere with scientific meetings where I met with, and presented papers along side, other researchers. For example, in July I participated with Dr. Brian Maki and his co-author Dr. McIlroy in an international symposium on falls held as part of the International Ergonomics Society Congress in Maastricht, Europe. Dr. Maki presented a scientific review of their handrail research at that symposium. (SMA's contractor, SGH, apparently has not presented or published its work for a similar group of experts on falls; SGH appears to have buried its two short papers in conferences not subject to critical review by falls research experts.) Thus I missed being present at the ANSI A117 Committee meeting where, had I been present, the defects of the SMA presentation would have received even more critical scrutiny than they did at the hands of fellow committee members.

Now, to dispatch the many groundless statements made by E87 proponents about the latest research and how the proposal could only be made now, after all this recent or new research, consider the following facts. The SMA submitted an almost identical proposed requirement for a "Type II" railing in code change proposal B81-98. Like the current IBC proposal E87-06/07, it had less to do with research and more to do with a specification based closely on the traditional type 6010 decorative railing. (See especially the eighth paragraph of the proponent's reason statement for E87 which admits railings—for which SMA's SGH-performed study miraculously came up with a "research-based" geometric specification—had been around "for perhaps hundreds of years." This does not comport with Mr. Cooper's comment that "old thought, old technology needs to be reversed.") I provided extensive graphic input to the hearing process in relation to that proposal which was, correctly, disapproved for the IBC. Even earlier, industry proponents tried to send a similarly flawed proposal through the One- and Two-Family Dwelling Code process and again I submitted graphic evidence (appended below) of just how bad that proposal, R18-94, was. A year earlier, in the BOCA code change process, SMA had a proposal that would allow, "Within a dwelling unit, any other shape which provides an opposing grip for thumb and forefinger with a gripping surface of at least 4 inches, but not greater than 6 1/4 inches is allowed, provided it does not exceed 3 inches in cross sectional dimension." Also, if my records are correct, there was yet another SMA attempt in 1992 to get the building codes to accept the traditional decorative railings as handrails. A few years before that, in all of the legacy code organization magazines, I published an article focused on handrail function and design. It appeared under the title, "Are functional handrails within our reach and our grasp?" in Southern Building, September/October 1989, pp. 20-30 and under the title, "Are functional handrails within our grasp?" in Building Standards, January/February 1991, pp. 6-12 and in The Building Official and Code Administrator, March/April, pp. 25-32. Earlier yet was my widely published article in all of the legacy code organization magazines under the title, "What can we do to improve stair safety?" for which part two addressed handrail graspability, in Southern Building, June-July, pp. 22-28; in Building Standards, July-August, pp. 13-16, p. 42; and in The Building Official and Code Administrator, July-August, pp. 10-15. Going back even further, there was my widely distributed guide published by the National Research Council of Canada and in print for nearly two decades, "Recommendations for improving the safety of stairs," NRC Building Practice Note No. 35; it drew on work by my US, Swedish and UK research peers as well as my own work in Canada.

Also, Mr. Cooper's Reason statement (tenth paragraph) for E87-06/07 contains some patently ridiculous statements regarding cost effectiveness of the Type II railing. It claims: "The adoption of the Type II shape allows the use of viable, lower-cost, safe handrails. Without allowing Type II shapes, we run the risk that economical and fully functional handrail designs (including those of wood, which require closely-spaced supports which potentially interfere with the grasping surface of round handrails) will be unreasonably excluded from use, to the detriment of the population which is entitled to cost-efficient construction when it has been demonstrated to be safe. Acceptance of the Type II shape would once again permit the use of low-cost, renewable resource handrail shapes, all but eliminated as an option for the jurisdictions adopting the current IBC code." On a running foot basis, the Type II railing, specifically the "6010" industry designation for such a decorative rail, costs several times more than do even more-functional sections (comparing prices for a few wood handrail sections within the same retail store). SMA and the home building industry, with help from others in industry and in code enforcement, have had considerable success in offering consumers a relatively costly railing with relatively poorer graspability and safety performance but, so far, this has mainly occurred in dwellings where a lower standard of public safety has become enshrined. This is not good public health policy, a point made in APHA public policy 200019, directed to ICC and NFPA.

The Larger Picture of Code Development in the ICC System: Why are there larger lessons in what happened with proposal E87-06/07?

The most troubling aspect of all of this: what happened at ICC's hearing in September 2006, in relation to proposal E87-06/07, reflects a very disturbing trend in the code development business and this is more pronounced in ICC than in NFPA (at least so far). That is the dumbing down of the process. For example, people who have relatively incomplete if not erroneous ideas about research procedures and findings are making public statements that are badly founded if not completely erroneous. Combined with the relatively severe restrictions ICC places on testimony time, this dumbing down means there is little chance that research will be fairly presented, objectively debated and critically assessed.

For this reason (and others I have tried to make well known to ICC leaders over several years) I simply will not be able to devote much of my time to the ICC process. For example, there are many other proposals addressed in the September 2006 hearings that deserve a critical review and outcome quite different than what occurred. If approved, they will make the ICC codes even worse than they are currently. I simply cannot address all of them so I have focused a lot of effort on this one proposal to show how dumbed down the process has become in ICC.

Selected critical, highly detailed reviews of other issues addressed in the ICC code change process will eventually be presented in a blog (weblog) that I am initiating to make the inadequacies of the code-development, code-adoption and code-enforcement processes in the US and Canada better known to the public, media, lawyers and public health authorities. This topic will also be addressed in an intensive, one-day workshop, on October 1, 2007, I am proposing for the 50th anniversary conference of the Human Factors and Ergonomics Society in Baltimore. With a focus on stairways, this workshop will be tailored for advanced professionals in the fields of public health, ergonomics, forensics, code consulting, code enforcement and law—indeed all who can benefit professionally from improved knowledge of human factors (ergonomics) issues in relation to stairway usability, safety, design and regulation. Stairways are one of the most dangerous products we use on a daily basis, with comprehensive injury costs greatly exceeding construction costs—by an order of magnitude! Handrails are the most useful mitigating feature for stair-related falls—but only if we design them correctly. Thus it is a shame that the level of discussion about the efficacy of handrails was at the low level displayed in much of the testimony at ICC's hearing on proposal E87-06/07. We all deserve better.

What Should ICC do with E87-06/07 and Related Proposals (such as E88-06/07)?

While ICC's problems are many, it can solve the problem of E87-06/07 by soundly disapproving it in the next round of hearings. It should then go on to remove the Type II railing provisions from the IRC, but that will likely not happen until ICC abandons its cozy relationship with home builders who dominate the process and product of the IRC, most notably in relation to stairways. However, in the immediate term, just because the IRC has been unrealistically compromised (mainly because of the home builders' dominance) is no reason that the IBC be dumbed down as well. Yet this is the premise behind proposal E87-06/07 and all the hype about research is mainly a smoke screen.

At the end of my 40 years of professional involvement with some of the largest public safety issues in buildings and their regulation—combined with close, widely recognized experience with the international research focused on this—five words sum up what is happening in ICC and to lesser or greater extents in other North American model code development processes. The five-word phrase is "dumbing down and sucking up." That we currently have such badly compromised requirements for dwelling stairs and railings is ample evidence of what a process will descend to if it is increasingly based on "dumbing down and sucking up." The biggest losers, of course, are the people—especially the very young, the elderly, those with disabilities—who have to use these buildings. Is it any wonder that an estimated 85 percent of stair-related injuries occur in residential settings? The most powerful forces in the building regulatory field are acting with unacceptable disregard for the safety of the most vulnerable in our society (Pauls, 2000). From a public health perspective, this is obscene and wholly unacceptable. Yet it is the very people we look to be "the silent defenders" who are condoning, if not facilitating this obscenity by "sucking up" to the home builders and their industry allies who insist on a double, lower standard for critical safety features of homes and, to achieve this end, are given disproportionate power on ICC committees and generally in code development, adoption, and enforcement. Here politics trumps science, public health and ethics.

Appendix with some of the prior input, from Jake Pauls, critical of previous proposals which attempted to have pinch-grip only railings accepted by the codes. **(See the SMA website, www.stairways.org/codes_standards.htm, for downloadable PDFs,"Visual Code Interpretations," depicting even worse decorative railings purported to meet the Type II requirements SMA has gotten into the International Residential Code.)**

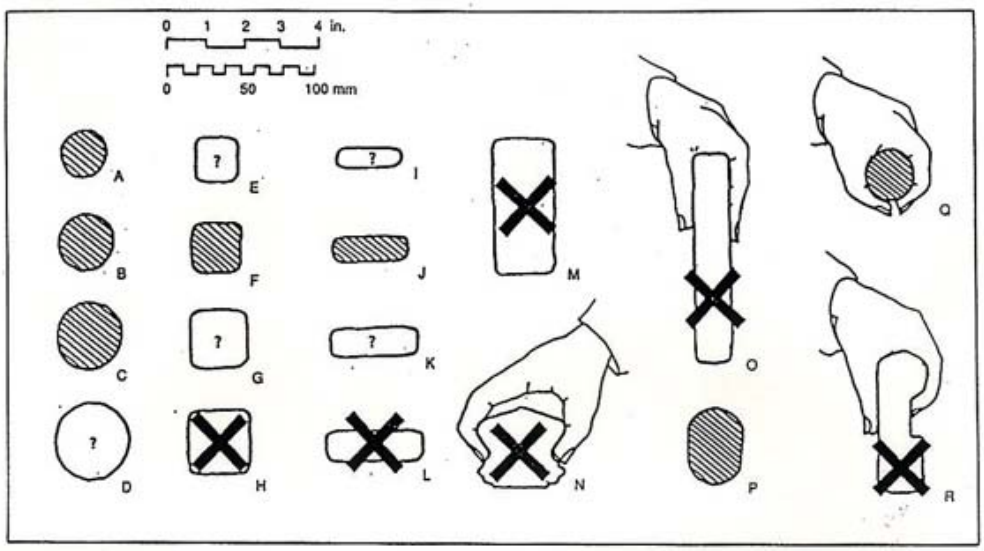


Diagram 1. Sections A to Q were tested biomechanically by Maki (1985, 1988). Diagonal shading marks recommended sections. Large crosses mark those performing poorly.

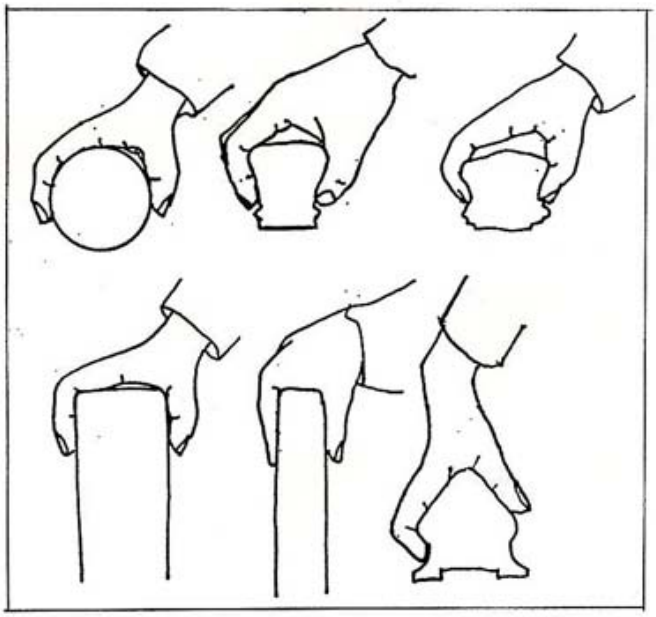


Diagram 2. Railing sections with poor graspability performance -- permitting only an ineffective pinch grip -- permitted by the original proposal R 18-94.

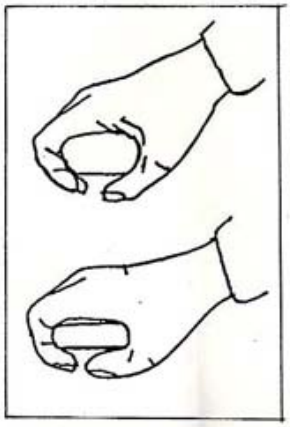


Diagram 3. Sections with good graspability -- with an effective power grip -- prohibited by minimum-dimension criterion in the original proposal R 18-94.

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Dusenberry, D.O., Simpson, H., DelloRusso, S.J., and Rao, R.S. (1999). Evaluation of Graspability of Handrails During Falls on Stairs, Proceedings of the 13th Conference of Engineering Mechanics, Baltimore, MD, 13-16, June, 1999. (www.sgh.com/PDFs/Dusenberry.pdf)

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Hall, N.B. and Bennett, E.M. (1956). Empirical assessment of handrail diameters. Journal of Applied Psychology, Vol. 40, No. 6, pp. 381-382.

Kroemer, K.H.E. (1986). Coupling the hand with the handle: an improved notion of touch, grip, and grasp. Human Factors, Vol. 28, No. 3, pp. 337-339.

Lawrence, B.A., Miller, T.R., Jensen, A.F., Fisher, D.A., and Zamula, W.W. (1999). Estimating the costs of nonfatal consumer product injuries in the United States. Proceedings of 7th International Conference on Product Safety Research, September 30 - October 1, 1999, Washington, DC, pp. 48-68.

Maki, B.E. and Fernie, G.R. (1983). Biomechanical assessment of handrail parameters with special consideration to the needs of elderly users. Report for Biomedical Engineering Research Program, DEE, National Research Council of Canada, Ottawa, 103 p. (PDF available from lead author and from Jake Pauls by Email.)

Maki, B.E. (1985). Influence of handrail shape, size and surface texture on the ability of young and elderly users to generate stabilizing forces and moments. Report for Biomedical Engineering Research Program, DEE, National Research Council of Canada, Ottawa, 81 p. (PDF available from author and from Jake Pauls by Email.)

Maki, B.E. and Perry, S.D. (1996). Influence of Handrail Design on Postural Stabilization: Pilot Phase. Report prepared for the Stairway Manufacturer's Association under contract to Simpson Gumpertz & Heger Inc., Arlington, MA. (http://www.stairways.org/code_changes/Influence_HandrailDesign.pdf)

Maki, B., Perry, S.D. and McIlroy, W.E. (1998). Efficacy of handrails in preventing stairway falls: A new experimental approach. Safety Science, Vol. 28, No. 3, pp. 189-206. **(Note this is the final, peer-reviewed scientific paper—published in an established and respected journal—of the work reported in preliminary fashion in the preceding reference. Keeping science paramount above commerce, the authors retained the right to publish free of influence from the funding organization, the Stairway Manufacturers Association (SMA) though its consultant SGH. Given the publication's scientific credentials, it is noteworthy that neither SGH nor SMA referenced this paper and, apparently, almost everyone testifying at the ICC hearing appeared to be unaware of, let alone familiar with, this publication. A partial reason for this may be an important statement in the "Discussion" section on the paper: "The observation that the hand needs to pull up on the rail under certain conditions may also have implications for handrail design, i.e. the need to provide an undersurface or finger purchase that will allow adequate 'pull-up' force to be generated without slippage." In this respect (and others) the Type II railing design proposed by SMA, and previously adopted for the IRC, fails its users badly. Slipping is a very likely outcome of an attempt, in a fall situation, to grasp this type of railing that allows only a pinch grip.**

Pauls, J. (1982). Recommendations for improving the safety of stairs. Building Practice Note No. 35, Division of Building Research, National Research Council Canada, Ottawa.

Pauls, J. (1984). What can we do to improve stair safety? Southern Building, April-May, pp. 14-20; June-July, pp. 22-28; Building Standards, May-June, pp. 9-12, 42-43; July-August, pp. 13-16, p. 42; The Building Official and Code Administrator, May-June, pp. 30-36; July-August, pp. 10-15.

Pauls, J. (1989). Are functional handrails within our reach and our grasp? Southern Building, September/October, pp. 20-30.

Pauls, J. (1991). Are functional handrails within our grasp? Building Standards, January/February 1991, pp. 6-12; The Building Official and Code Administrator, March/April, pp. 25-32.

Pauls, J. (1998). Comment on Code Change No: B81-98, Section 1022.2.4: Handrail graspability. Public Comments on the 1998 Proposed Changes to the BOCA National Codes/1996. Building Officials and Code Administrators International, Inc., Country Club Hills, Illinois.

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Pauls, J. (2000). Representation of the Elderly in Premises Liability Cases with a Focus on Falls. Reference Materials Volume II, Convention of the Association of Trial Lawyers of America, Chicago, August 2000, pp. 2613-2626.

Pauls, J. (2001). Life Safety Standards and Guidelines Focused on Stairways. In Preiser and Ostroff (eds.) Universal Design Handbook, McGraw Hill, pp. 23.1-23.20.

Pauls, J. (2007). Stairways for Children. In Ergonomics for Children: Designing products and places for toddlers to teens, Valerie Rice and Rani Lueder (Editors), CRC Press, Taylor and Francis. (www.crcpress.com)

SMA (2006). Visual Interpretation of the International Residential Code: 2006 Stair Building Code. Stairway Manufacturers Association. (This and prior guides for 2000 and 2003, plus for New York State, 2002, are downloadable from www.stairways.org/codes_standards.htm) **These documents invite feedback and comment: thus it should be noted how far from a reasonable interpretation of equivalent graspability are some of the traditional handrail sections that the SMA suggests comply with the Type II specification. In other words, the problems with what SMA proposes and interprets go far beyond the type 6010 railing that has been featured in this comment. Installation of these railings may well be worse, in terms of user safety, than providing no handrail at all on a stair as users are lulled into a false sense of security that an effective grasp will be possible in case of a fall. This also goes well beyond the points made by several people in the ICC hearing that such railings do not comply with ANSI A117.1 and the ADA/ABA guidelines nor are they going to be effective for children. With these Visual Interpretations, SMA provides additional meaning to the testimony of SMA representative, Mr. Cooper, that "old technology needs to be reversed."**

Templer, J.A. (1992). The staircase: Studies of hazards, falls, and safer design. MIT Press, Cambridge, MA, pp. 123-126.

Final Action: AS AM AMPC ____ D

E88-06/07
1012.3 (IFC [B] 1012.3)

Proposed Change as Submitted:

Proponent: David W. Cooper, Stairway Manufacturers' Association

Revise as follows:

1012.3 Handrail graspability. All required handrails shall meet Type I criteria as follows or shall provide equivalent graspability.

Type I. Handrails with a circular cross-section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm) ~~or shall provide equivalent graspability~~. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (160 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Exception: In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; handrails shall be Type I, Type II as follows or shall provide equivalent graspability.

Type II. Handrails with a perimeter greater than 6.25 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of .75 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least .3125 inch (8 mm) within .875 inch (22 mm) below the widest portion of the profile. This required depth shall continue for at least .375 inch (10mm)to a level that is not less than 1.75 inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1.25 inches (32 mm) to a maximum of 2.75 inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Reason: The purpose of the change is to add new requirements to the code. This proposal is offered only as an alternative to our other change to this section, which would allow a more comprehensive solution.

Other types of rail have been proven to be equivalent to, or better than those currently allowed. Although this proposal will allow the use of additional types of rails now restricted from the code. The Type II shape allows for the development of new ergonomic profiles that could exceed the properties of the limited handrail options now allowed in the IBC. Such options would not only permit the design of profiles for those with impairments, unable to close their hand to grasp small round objects, but also would allow greater flexibility to the designer that must respond to the aesthetic preferences of the consumer, thereby encouraging long-term and committed compliance with code regulations. Because this proposals scope is only for residential use these advantages would be severely compromised and only available to persons in the home environment.

The handrail shape description that is proposed for Type II handrails has been developed by independent researchers retained by the SMA to investigate graspability of handrails. Acting without specific mandate from SMA, these researchers developed and implemented tests, experiments, and analyses that revealed stairway fall kinematics, the forces that stairway users exert on handrails during falls, and the forces that persons in the general population can exert on handrails of various shapes.

Specifically, through a collaborative effort with researchers at the University of Toronto, the primary researchers – engineers with Simpson Gumpertz & Heger Inc. – conducted tests with human subjects to determine forces exerted on handrails. During these tests, test subjects stood on an activated stairway in postures and positions that represent those of a descending stairway user. Then, the stairway was induced to move forward
and then suddenly stopped to cause the test subjects to lurch forward. By setting certain test parameters and through the introduction of barriers that prevented the test subjects from recovering, test subjects fell forward while attempting to arrest their fall by grabbing a handrail. During these tests, the researchers measured the forces exerted on the handrail and monitored the movements of the test subjects to understand fall kinematics.

To account for the broad variation in human stature, the researchers used a computer program, calibrated against the Toronto tests with live subjects, to extrapolate those test results to determine forces generated on handrails by persons representing the distribution within the population.

In a separate set of tests, the researchers investigated forces that persons can exert on handrails of various shapes. For these studies, the researchers developed test apparatus that allowed test subjects to grasp segments of handrails, which were then pulled by a motor out of the test subjects' grasp while forces were recorded. The test subjects were in a seated position (which represents a position that is similar to the posture that persons falling on stairways attain at the time they are exerting maximum arresting force on handrails), and forces were measured in three orthogonal directions: transverse, perpendicular upward, and longitudinal relative to the rail. Hundreds of tests were performed with dozens of test subjects ranging in age from sub-adolescent to elderly.

These tests, experiments, and analyses evaluated round handrails and a broad range of dimensions of handrails that are not round. With the results of these studies, the researchers conducted statistical analyses to determine the proportion of the population that would likely not be able to maintain a grasp on handrails of various shapes during a fall. Using this method, the researchers determined which shapes are graspable (meaning, at least as likely as round handrails to be secure handholds in actual fall scenarios). These statistical analyses showed that Type II handrails have graspability that is essentially equal to or greater than the graspability of handrails meeting the long-accepted and codified shape defined in this proposal as Type I (essentially round handrails, of common size).
The key feature of the graspability of Type II handrails is graspable finger recesses on both sides of the handrail. These recesses allow users to firmly grip a properly proportioned grasping surface on the top of the handrail, ensuring that the user can tightly retain a grip on the handrail for all forces that are associated with attempts to arrest a fall. In addition, Type II handrails have been shown to more than serve adequately for "guidance and support" as required by codes.

The research conducted by these independent researchers validates experience with handrails in service. Handrails meeting the Type II definition have been in service for perhaps hundreds of years without documentation that there is any deficiency in their functional characteristics. Indeed, some handrails conforming to the Type II definition perhaps are among the most common shapes presently used in the United States. Furthermore, by adopting the definition of Type II handrails in the IBC, we will be positively excluding from use a wide spectrum of handrail shapes that also are in common use, but do not meet the standard for graspability that has led to this proposal. With the adoption of this proposal, much of the uncertainty about what constitutes "equivalent graspability" will be removed, since a specific definition of acceptable alterative shapes will be introduced and codified.

The Type II definition has been expressly included in the IRC for five years. During that time, this shape definition has become a standard for determining the suitability of handrail shapes, even in jurisdictions that have not adopted the IRC. Furthermore, the SMA is aware of no documentation that suggests that inclusion of the Type II definition in the IRC has in any way diminished safety of handrails.

The adoption of the Type II shape allows the use of viable, lower-cost, safe handrails. Without allowing Type II shapes, we run the risk that economical and fully functional handrail designs (including those of wood, which require closely-spaced supports which potentially interfere with the grasping surface of round handrails) will be unreasonably excluded from use, to the detriment of the population which is entitled to cost-efficient construction when it has been demonstrated to be safe. Acceptance of the Type II shape would once again permit the use of low-cost, renewable-resource handrail shapes, all but eliminated as an option for the jurisdictions adopting the current IBC code.

The research and testing summarized above has been published and is available on the Internet as listed below in the bibliography. We believe that these landmark studies, sponsored by the SMA but performed by independent researchers, constitute the most thorough and legitimate research on handrail graspability performed anywhere in the world.

Bibliography:

Dusenberry, D.O., Simpson, H., DelloRusso, S.J., and Rao, R.S., "Evaluation of Graspability of Handrails During Falls on Stairs," Presented at the Proceedings of the 13th Conference of Engineering Mechanics, Baltimore, MD, 13-16, June, 1999. http://www.sgh.com/PDFs/Dusenberry.pdf

Maki, B.E. and Perry, S.D. (1996). "Influence of Handrail Design on Postural Stabilization: Pilot Phase." Report prepared for the Stairway Manufacturer's Association under contract to Simpson Gumpertz & Heger Inc., Arlington, MA. http://www.stairways.org/code_changes/Influence_HandrailDesign.pdf

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

Committee Action: Approved as Submitted

Committee Reason: The proposal is limited to handrails along stairways within individual dwelling units in Group R-2 and R-3. Approval will allow for coordination with the IRC. The studies have proved that these handrails proposed as Type II would result in handrails which provide equivalent graspability to what is currently permitted in the code.

Assembly Action: None

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

David W Cooper, Stairway Manufacturer's Association, requests Approval as Modified by this public comment.

Modify proposal as follows:

1012.3 Handrail ~~graspability~~ grip size. All required handrails shall meet Type I criteria as follows or shall provide equivalent graspability.

Type I. Handrails with a circular cross-section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm). If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (160 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Exception: In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; handrails shall be Type I, Type II as follows or shall provide equivalent graspability.

Type II. Handrails with a perimeter greater than 6.25 inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of .75 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least .3125 inch (8 mm) within .875 inch (22 mm) below the widest portion of the profile. This required depth shall continue for at least .375 inch (10mm) to a level that is not less than 1.75 inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1.25 inches (32 mm) to a maximum of 2.75 inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

Commenter's Reason: This proposal identifies the dimensions of the grip size of the rail and has been previously titled *Grip Size* in the IBC rather than *Graspability.* It is currently in the IRC as *Graspability*. The section clearly describes the parameters of the grip size and perhaps this would help to clarify the section and eliminate some of the debate as to "ability" or "disability. For this reason although we support the committee's approval as modified but are also in support of as submitted if coordination of the two documents is an issue. For this same reason we have also submitted a modification to the IBC proposal E 87 however the more important issue is the text of the section not the title.

Public Comment 2:

Jake Pauls, Jake Pauls Consulting Services in Building Use and Safety, representing himself, requests Disapproval.

Commenter's Reason: Proposal E88-06/07 attempts to degrade the IBC by extending, from the IRC, a badly flawed, poorly substantiated provision permitting handrails to be relatively dysfunctional, in arresting falls. Refer to my extensive comment on related proposal E87-06/07 which underlines how mistaken was the addition, in the IRC, of the badly flawed Type II handrail. It would only be a further mistake to now adopt, in the IBC, the same mistake made in the IRC.

As detailed in my comment on E87-06/07, some research—used to justify the IRC's Type II requirement—has been badly misrepresented in the proposal and by some testifying in the first hearing. Because such misrepresentation is pathological for a fair, technically sound code development process, an extraordinary degree of detail on what happened in the first hearing is provided in that related comment. Such a careful examination offers important lessons about the importance, first, of handrails in stairway safety; secondly, of a thoughtful—indeed skeptical, detailed examination of research; and, thirdly, of honesty in a code-development process maintained by an organization with the vision, mission and values claimed by ICC at www.iccsafe.org.

My related comment on E87-06/07 also notes, in passing, that the Egress Code Committee's votes on E88-06/07 were closely divided, with a tie vote for both an initial motion for disapproval and in the subsequent motion for approval as submitted. In each case the Committee Chair voted, subsequently, to break the tied vote by voting in favor of an approved as submitted recommendation.

I hope, that once there is more widespread realization by ICC members of the serious flaws in the arguments made for E87-06/07—which were implicitly applied also to closely related proposal E88-06/07, there will be a final vote of disapproval of E88-06/07. This should then be followed, in subsequent hearings, by the removal of the Type II handrail language from the IRC. In other words, in the effort to make the I-Codes responsive to public health needs, specifically the reduction of the huge injury tolls related to stairs—especially in dwellings, the IBC will have to lead, not the IRC.

Final Action: AS AM AMPC ____ D

E92-06/07
1012.5 (IFC [B] 1012.5)

Proposed Change as Submitted:

Proponent: Bill Conner, Conner Associates LLC, representing himself

Revise as follows:

1012.5 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight or ramp run. At stairways where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. At stairways and ramps the handrail extensions shall extend in the same direction of the stair flight and ramp run.

Exceptions:

1. Handrails within a dwelling or sleeping unit that is not required to be ~~accessible~~ Accessible, Type A or Type B units in accordance with Section 1107, need extend only from the top riser to the bottom riser.
2. Aisle handrails in Group A occupancies in accordance with Section 1025.13.

Reason: The change adds a new sentence. The current provisions do not indicate if the handrails extensions must go straight or could bend. If they bend, they no longer assist the stairway user that needs the handrail for support. The change is also for coordination with ADAAG and ICC A117.1 Section 505.10. We have another proposal that includes an exception at stairways in alterations.

The intent of the additional language in Exception 1 is so that there is no confusion with the three levels of units in ICC A117.1. For example – is a Type B dwelling unit accessible? The effect should be minimal since Accessible, Type A and Type B units do not typically have stairways.

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

Committee Action: **Disapproved**

Committee Reason: The straight extension of the handrail into the landing at the top or bottom of the stairway could be an egress hazard. There should be an exception for these extensions where handrails are continuous and in Group A aisle situations. In the exception, while the Accessible and Type A units should be excluded, Type B units should be permitted to use the exception.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

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

Commenter's Reason: A common error on plans is when the handrail extension turns at the top and bottom risers of the stairway and runs at 90 degrees from the line of travel. The 1992 A.N.S.I. Standard A4.3.11 on page 29 states "Bending the handrail extension at 90 degrees to the direction of travel puts the extension out of reach and defeats its purpose". This proposal makes it clear that the extension must extend in the direction of travel. At intermediate landings the direction of run turns at the landing so the extension can do the same whereas when the stairway terminates the direction of run continues straight ahead. When a handrail extension is only provided on one side of the stairway then a disabled person must be on that side of the stairway to benefit from the extension. At Orlando there was concern about the handrail extending into the path of cross travel. This should never be a problem when the stairway is designed with the extensions and the building is designed around the stairway. The only problem would be in existing construction which is exempt from the stairway requirements in I.B.C. Section 3403.4. Why require handrail extensions if they are not provided on both sides.

Public Comment 2:

Philip Brazil, P.E., Reid Middleton, Inc, representing himself, requests Approval as Modified by this public comment.

Replace proposal with the following:

1012.5 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stair flight or ramp run. At stairways where handrails are not continuous between flights, the handrails shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. <u>The extensions of handrails shall be in the same direction of the stair flights at stairways and the ramp runs at ramps</u>.

Exceptions:

1. Handrails within a dwelling <u>unit or sleeping</u> unit that is not required to be ~~accessible~~ <u>an Accessible unit or a Type A unit,</u> need extend only from the top riser to the bottom riser.
2. Aisle handrails in Group A occupancies in accordance with Section 1025.13.

Commenter's Reason: The question of what direction handrails should extend at the top and bottom of stair flights and ramp runs has existed for many years. I believe public safety is better served when the extensions are in the same direction as the stair flights and ramp runs they serve. This public comment proposes language making it clear that the extensions are required to be in the same direction. It will also better align IBC Section 1012.5 with Section 505.10 of ICC A117.1-03, which requires handrails to extend beyond and in the same direction of stair flights and ramp runs.

Exception #1 is revised for consistency with the terminology in IBC Chapter 11 for dwelling units, sleeping units, Accessible units and Type A units. Note that the first two terms are defined in Section 202 and the last two terms are defined in Section 1102.1. The reference to Type B units in Exception #1 of the original proposal is deleted because multistory dwelling units and sleeping units not provided with elevator service are not required to be Type B units (IBC Section 1107.7.2).

The committee's reason for disapproval in the Report of the Public Hearings states that there should be an exception where handrails are continuous. The proposed language requiring handrail extensions to be in the same direction as stair flights and ramp runs, however, does not apply to continuous handrails because there is no extension at a continuous handrail, only at the ends of handrails.

The committee's reason for disapproval in the Report of the Public Hearings also states that there should be an exception for Group A aisle situations. Section 1012.5, however, currently exempts Group A aisles from the requirement for handrail extensions and this public comment has no effect on that exemption. Exception #2 to Section 1012.5 exempts aisle handrails in Group A occupancies in accordance with Section 1025.13. Section 1025.13, in turn, applies to ramped aisles and aisle stairs.

The committee's reason for disapproval in the Report of the Public Hearings states that the straight extension of the handrail into the landing at the top and bottom of the stairway could be an egress hazard. Section 1012.5, however, currently requires handrails to return to a wall, guard or the walking surface, except for handrails that are continuous to an adjacent stair flight or ramp run. An extension of a handrail is a portion of the handrail and is subject to this same requirement.

Final Action: AS AM AMPC ____ D

E96-06/07, Part I

1013.1, 1013.1.1 (New), 1013.2, 1013.3, 1013.5, 1013.6 (IFC [B] 1013.1, [B] 1013.1.1 (New), [B] 1013.2, [B] 1013.3, [B] 1013.5, [B] 1013.6)

Proposed Change as Submitted:

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

PART I – IBC MEANS OF EGRESS

Revise as follows:

SECTION 1013.0
GUARDS

1013.1 Where required. Guards shall be located along open-sided walking surfaces, including mezzanines, industrial equipment platforms, ~~stairway~~s, stairs, ramps and landings, that are located more than 30 inches above the floor or grade below. Guards shall be adequate in strength and attachment in accordance with Section 1607.7. ~~Where glass is used to provide a guard or as a portion of the guard system, the guard shall also comply with Section 2407. Guards shall also be located along glazed sides of stairways, ramps and landings that are located more than 30 inches (762 mm) above the floor or grade below where the glazing provided does not meet the strength and attachment requirements in Section 1607.7.~~

Exception: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including steps leading up to the stage and raised platforms.
3. On raised stage and platform floor areas such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating where guards in accordance with Section 1025.14 are permitted and provided.

1013.1.1 Glazing. Where glass is used to provide a guard or as a portion of the guard system, the guard shall also comply with Section 2407. Where the glazing provided does not meet the strength and attachment requirements in Section 1607.7, complying guards shall also be located along glazed sides of open-sided walking surfaces.

1013.2 Height. Guards shall form a protective barrier not less than 42 inches (1067 mm) high, measured vertically above the adjacent walking surfaces, adjacent fixed seat-boards or the line connecting the leading ~~edge~~ edges of the ~~tread~~ treads ~~, adjacent walking surface or adjacent seat-board~~.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, ~~guards whose top rail also serves as a handrail shall have a height not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from the leading edge of the stair tread nosing.~~ guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.

2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.

~~2.~~ 3. The height in assembly seating areas shall be in accordance with Section 1025.14.

1013.3 Opening limitations. ~~Open~~ Guards shall ~~have balusters or ornamental patterns such that a~~ not have openings which allow passage of a sphere 4-~~inch-~~ inches (102 mm) ~~diameter sphere~~ in diameter from the walking surface to the required guard height ~~cannot pass through any opening up to a height of 34 inches (864 mm). From a height of 34 inches (864 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, a sphere 8 inches (203 mm) in diameter shall not pass.~~

Exceptions:

1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), guards shall not have openings which allow passage of a sphere 4.375 inches (111 mm) in diameter.

~~1.~~ 2. The triangular openings at the open sides of a stair, formed by the riser, tread and bottom rail, ~~at the open side of a stairway~~ shall ~~be of a maximum size such that a sphere of 6 inches (152 mm) in diameter cannot pass through the opening.~~ not allow passage of a sphere 6 inches (152 mm) in diameter.

~~2~~ 3. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall ~~have balusters or be of solid materials such that a sphere with a diameter of 21 inches (533 mm) cannot pass through any opening.~~ not have openings which allow passage of a sphere 21 inches (533 mm) in diameter.

~~3.~~ 4. In areas which are not open to the public within occupancies in Group I-3, F, H or S, ~~balusters, horizontal intermediate rails or other construction shall not permit a sphere with a diameter of 21 inches (533 mm) to pass through any opening.~~ guards shall not have openings which allow passage of a sphere 21 inches (533 mm) in diameter.

~~4.~~ 5. In assembly seating areas, guards at the end of aisles where they terminate at a fascia of boxes, balconies and galleries shall ~~have balusters or ornamental patterns such that a~~ not have openings which allow passage of a sphere 4 ~~inch~~ inches (102mm) in diameter ~~sphere cannot pass through any opening~~ up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, guards shall not have openings which allow passage of a sphere 8 inches (203 mm) in diameter ~~shall not pass~~.

~~5.~~ 6. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, ~~openings for required guards on the sides of stair treads shall not allow a sphere of 4.375 inches (111 mm) to pass through.~~ guards on the open sides of stairs shall not have openings which allow passage of a sphere 4.375 (111 mm) inches in diameter.

1013.4. Screen porches. (No change to current text)

1013.5 Mechanical equipment. Guards shall be provided where appliances, equipment, fans, roof hatch openings or other components that require service are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall be constructed so as to prevent the passage of a sphere 21 ~~inch~~ inches (533 mm) in diameter ~~sphere~~. The guard shall extend not less than 30 inches (762 mm) beyond each end of such appliance, equipment, fan or component.

1013.6 Roof access. Guards shall be provided where the roof hatch opening is located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall be constructed so as to prevent the passage of a sphere 21 ~~inch~~ inches (533 mm) in diameter ~~sphere.~~

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

This proposed change is a result of the CTC's investigation of the area of study entitled "Climbable Guards". The scope of the activity is noted as:

The study of climbable guards will focus on determining the need for appropriate measures to prevent or inhibit an individual from utilizing the elements of a guard system, including rails, balusters and ornamental patterns, to climb the guard, thereby subjecting that person to the falling hazard which the guard system is intended to prevent.

The general focus of these two proposals, one to the IBC and one to the IRC, is to create consistency in language regulating guards in the two codes.

IBC 1013.1.Editorial. Laundry lists of items in the code are typically not all-inclusive. The word "including" provides this clarification in the following sections as well. This section is divided into two paragraphs with the second paragraph dealing with glass and glazing without a change in intent.

IBC 1013.2: The technical portion of this change is the change which identifies that a fixed seat becomes a potential walking surface to a child and thus warrants the guard height to be measured from that point. The remainder does not change the intent but rather provides standardized text dealing with stair treads and the determination of how to measure guard height.

IBC 1013.3: The majority of the revision in this section and exception involve editorial rewording of the sentences for clarity and consistency. The technical change is to reduce the maximum opening (8" to 4-3/8" inches) for this upper portion of the guard above 36 inches.

The 8 inch limitation on openings at the upper section of the guard was based on the difference between the 34 inch height being the part of the guard that protects small children and the 42 inch height for the rest of the population. However this does not take into account that residential R-3 use groups require a minimum guard height of 36 inches. Proposed exception 1 raises the height for which the 4 inch opening requirement is applicable - to coincide with the minimum guard height of 36 inches in residential occupancies.

The change in maximum opening size at the upper portion of the guard, from the current 8 inch sphere criteria to a 4-3/8 inch sphere, is based on providing an equivalent level of protection as that provided by the current 4 inch opening on the lower portion of the guard. As a point of reference, the following measurements of head sizes of infants are excerpted from Drawing #2 Measurement of Infants from a book entitled "The Measure of Man and Woman: Human Factors" by Alvin R. Tilley, first published by Whitney Library of Design in 1993, republished and copyrighted by John Wiley & Sons, New York (ISBN 0-471-09955-4) in 2002.

The publication states "We have chosen to accommodate 98% of the U.S. population, which lies between the 99 percentile and the 1 percentile, for product designs for civilians" page 10-11 headlined percentiles.

Age	Side-to-side measurement	Back-to-front measurement
12-15 months:	5"	6.5"
16-19 months:	5"	6.5"
20-23 months:	5.1"	6.8"

Additional point of reference, from the same book entitled "The Measure of Man and Woman: Human Factors" by Alvin R. Tilley, figure number 8, page 14, showing child age 2.5 – 3 years. The chest dimension when scaled (1" = 12") shows a 4-3/4" dimension from the back to the front.

The following information from various resources has been compiled to illustrate how countries outside of the US are regulating the openings in guards:

Country of Origin	Sphere Rule Metric	Sphere Rule Inches
Canada	100mm	3.94"
United Kingdom	100mm	3.94"
United States	102mm	4"
Australia	125mm	4.92"
Germany	120mm	4.72"
France	110mm	4.33"
Mexico (no code – standard followed)	102mm – 152mm	4" – 6"
Russia	100mm	3.94"
Romania	100mm	3.94"
Trinidad & Tobago	102mm	4"
Japan (Confirmation Pending)	125mm	4.92"
Spain (Confirmation Pending)	(120mm) (125mm)	(4.72") (4.92")
Switzerland	120mm	4.72"
Sweden	100mm	3.94"
Taiwan (Confirmation Pending)	125mm	4.92"
Singapore (Confirmation Pending)	125mm	4.92"
Poland (Confirmation Pending)	100mm	3.94"
Turkey	100 mm	3.94"
Netherlands (Confirmation Pending)	100mm	3.94"

Bibliography:

Interim Report No. 1 of the CTC, Area of Study – Climbable Guards, March 9, 2006.
"The Measure of Man and Woman: Human Factors" by Alvin R. Tilley

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

Committee Action: Disapproved

Committee Reason: Repeatedly throughout the testimony the phrase "work in progress" was used. This is a work in progress and is not ready to go into the code. Measuring a guard height from a seat board is too restrictive. At what point would you stop with items adjacent to guards (e.g. storage boxes, planters, moveable furniture). There may be some legal implications with this requirement that would not be consistent with the intent of the CTC. Section 1013.2 Exceptions 1 and 2 are redundant. There is a double negative in Section 1013.2, Exception 2.

Assembly Action: None

Individual Consideration Agenda

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

Public Comment:

Paul K. Heilstedt, PE, Chair, ICC Code Technology Committee (CTC), requests Approval as Modified by this public comment for Part I.

Modify proposal as follows:

1013.1 Where required. Guards shall be located along open-sided walking surfaces, including mezzanines, industrial equipment platforms, stairs, ramps and landings, that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side ~~above the floor or grade below~~. Guards shall be adequate in strength and attachment in accordance with Section 1607.7.

Exception: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including steps leading up to the stage and raised platforms.
3. On raised stage and platform floor areas such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating where guards in accordance with Section 1025.14 are permitted and provided.

1013.2 Height. Guards shall form a protective barrier not less than 42 inches (1067 mm) high, measured vertically above the adjacent walking surfaces, adjacent fixed seat-boards or the line connecting the leading edges of the treads.

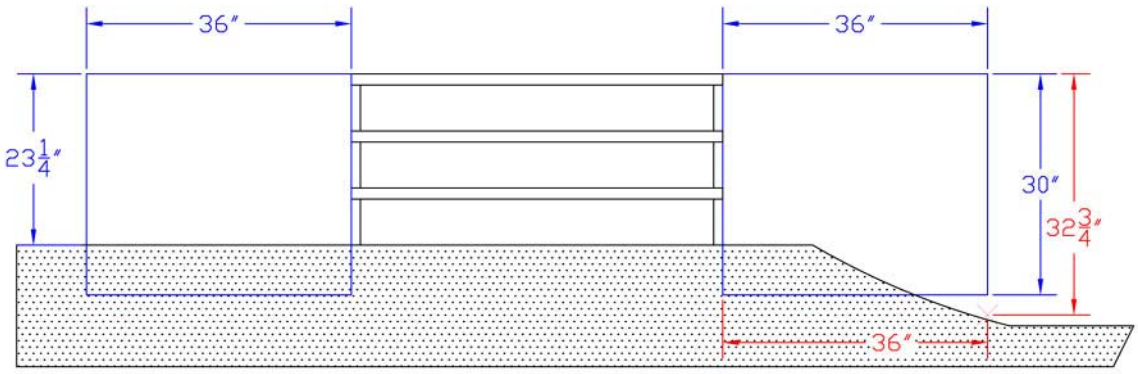
Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.
2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be ~~not~~ less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.
3. The height in assembly seating areas shall be in accordance with Section 1025.14.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: The code change committee sites in their reason that this issue is a “work in progress”. While this is true regarding the CTC’s review of the subject of climbable guards as far as testing, the CTC has concluded its review and solicitation of comments on the subject matter included in this proposal. The following revisions are proposed in response to the code committees concerns:

IBC 1013.1 Height measurement: This public comment is submitted in order to clarify how the height measurement which triggers the guard requirement is made relative to proximity to the adjacent fall-off. This is illustrated in the following figure:



The view is taken from the landing of a 3 riser stair, looking towards the face of the risers.

IBC 1013.2 “Seat board” terminology: This public comment revises the term to “fixed seating” so as to clarify the measurement, using common terminology. Fixed seating represents a walking surface which is sure to be utilized by children. As such, the measurement of the guard must be taken from this location to address the hazard of a child falling over the guard. It is impossible for the code to regulate ornamentals such as planters, furniture and the like and this proposal does not intend to regulate them.

IBC 1013.2 Redundant exceptions: The committee notes that they feel that exceptions 1 and 2 are redundant. A careful reading of the text revisions reveals a subtle difference. Exception 1 is a general exception for guard height along stairs. Exception 2 addresses the guard height where the top of the guard serves as a handrail. This distinction is intended to provide clarification in the code for the two possible scenarios.

IBC 1013.2 Exception 2 - Double negative: This was inadvertent. The public comment deletes the word “not” in Exception 2 to Section 1013.2.

Final Action: AS AM AMPC ____ D

E96-06/07, Part II
IRC R312.1, R312.2 (New), R312.2

Proposed Change as Submitted:

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

PART II – IRC

SECTION R312
GUARDS

R312.1 Where ~~Guards~~ required. ~~Porches, balconies, ramps or raised walking floor surfaces located more than 30 inches above the floor or grade below shall have guards not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 34 inches (864 mm) in height measured vertically from the nosing of the treads.~~ Guards shall be located along open-sided walking surfaces, including porches, decks, balconies, mezzanines, stairs, ramps and landings, which are located more than 30 inches (762 mm) above the floor or grade below. Insect screening shall not be considered as a guard.

~~Porches and decks which are enclosed with insect screening shall be equipped with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.~~

R312.2 Height. Guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches (914 mm) high measured vertically above the adjacent walking surface, adjacent fixed seat-boards or the line connecting the leading edges of the treads.

Exceptions:

1. Guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.
2. Where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.

~~R312.2~~ R312.3 ~~Guard~~ Opening limitations. ~~Required~~ Guards ~~on open sides of stairways, raised floor areas, balconies and porches~~ shall not have openings ~~intermediate rails or ornamental closures~~ which ~~do not~~ allow passage of a sphere 4 inches (102 mm) ~~or more~~ in diameter from the walking surface to the required guard height.

Exceptions:

1. The triangular openings at the open side of a stair, formed by the riser, tread and bottom rail of a guard, ~~at the open side of a stairway~~ shall ~~are permitted to be of such a size that a sphere 6 inches cannot pass through.~~ not allow passage of a sphere 6 inches (153 mm) in diameter.
2. ~~Openings for required guards on the open sides of stair treads stairs shall not allow passage of a sphere 43/8 inches or more in diameter to pass through~~ Guards on the open sides of stairs shall not have openings which allow passage of a sphere 4.375 inches (111 mm) in diameter

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

This proposed change is a result of the CTC's investigation of the area of study entitled "Climbable Guards". The scope of the activity is noted as:

The study of climbable guards will focus on determining the need for appropriate measures to prevent or inhibit an individual from utilizing the elements of a guard system, including rails, balusters and ornamental patterns, to climb the guard, thereby subjecting that person to the falling hazard which the guard system is intended to prevent.

The general focus of these two proposals, one to the IBC and one to the IRC, is to create consistency in language regulating guards in the two codes.

IRC R312.1: This section is being divided into two sections, similar to the IBC. The first section includes the general guard requirement, and the new section (R312.2) includes the height requirements.

IRC R312.2: This new section includes the guard height requirements. It is reformatted to place emphasis on the 36" high guard required at level surfaces. There are not technical changes to the minimum height. This section does include an added phrase - "or adjacent seatboard" – intended to clarify that where there is built-in seating, the guard height is to measured from the seat itself to provide for the minimum required height where it is assumed that children may be standing.

IRC R312.3: The majority of the revision in this section and exception involve editorial rewording of the sentences for clarity and consistency.

Bibliography:

Interim Report No. 1 of the CTC, Area of Study – Climbable Guards, March 9, 2006.
"The Measure of Man and Woman: Human Factors" by Alvin R. Tilley

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

Committee Action: **Disapproved**

Committee Reason: The proposed language would increase the scope of this section to include any walking surface greater than 30 inches above the floor or grade. This was would be over restrictive and would also cause an issue with seat boards.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Paul K. Heilstedt, P.E., Chair, ICC Code Technology Committee (CTC), requests Approval as Modified by this public comment.

Modify proposal as follows:

R312.1 Where required. Guards shall be located along open-sided walking surfaces, including porches, decks, balconies, mezzanines, stairs, ramps and landings, which are located more than 30 inches (762 mm) ~~above the floor or grade below~~ measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side. Insect screening shall not be considered as a guard.

R312.2 Height. Guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches (914 mm) high measured vertically above the adjacent walking surface, adjacent fixed ~~seat boards~~ seating or the line connecting the leading edges of the treads.

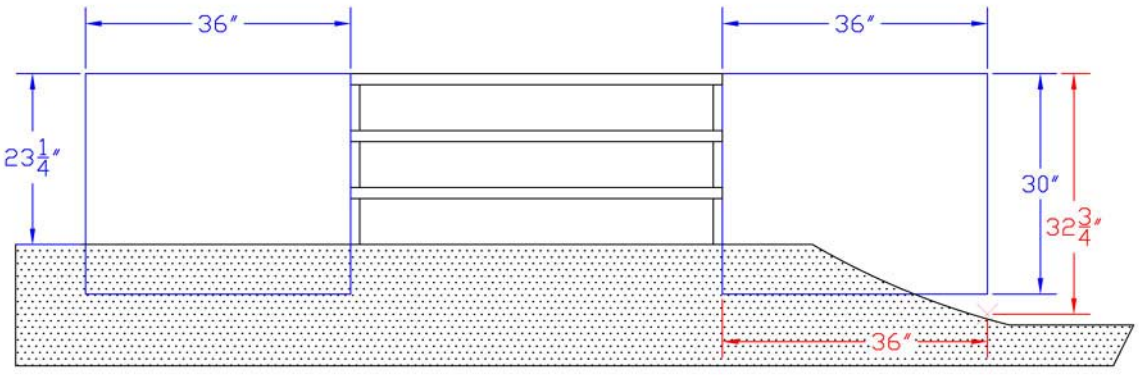
Exceptions:

1. Guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.
2. Where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.

(Portions of proposal not shown remain unchanged)

Commenter's Reason: The code change committee sites in their reason that this issue is a "work in progress". While this is true regarding the CTC's review of the subject of climbable guards as far as testing, the CTC has concluded its review and solicitation of comments on the subject matter included in this proposal. The following revisions are proposed in response to the code committees concerns:

IRC R312.2 Height measurement: This public comment is submitted in order to clarify how the height measurement which triggers the guard requirement is made relative to proximity to the adjacent fall-off. This is illustrated in the following figures:



The view is taken from the landing of a 3 riser stair, looking towards the face of the risers.

R312.2 "Seat board" terminology: This public comment revises the term to "fixed seating" so as to clarify the measurement, using common terminology. Fixed seating represents a walking surface which is sure to be utilized by children. As such, the measurement of the guard must be taken from this location to address the hazard of a child falling over the guard. It is impossible for the code to regulate ornamentals such as planters, furniture and the like and this proposal does not intend to regulate them.

R312.2 Redundant exceptions: The committee notes that they feel that exceptions 1 and 2 are redundant. A careful reading of the text revisions reveals a subtle difference. Exception 1 is a general exception for guard height along stairs. Exception 2 addresses the guard height where the top of the guard serves as a handrail. This distinction is intended to provide clarification in the code for the two possible scenarios.

Final Action: AS AM AMPC ____ D

E97-06/07, Part I
1013.1 (IFC [B] 1013.1)

Proposed Change as Submitted:

Proponent: Thomas B. Zuzik, Jr., Artistic Railings, Inc., representing himself

PART I – IBC MEANS OF EGRESS

Revise as follows:

1013.1 Where required. Guards shall be located along open-sided walking surfaces, mezzanines, industrial equipment platforms, stairways, ramps and landings which are located more than 30 inches (762 mm) above the floor or grade below, measured vertically from the edge height of the open-side to the deepest point no more than 24 inches (610 mm) horizontal off the open-side edge. Guards shall be adequate in strength and attachment in accordance with Section 1607.7. Where glass is used to provide a guard or as a portion of the guard system, the guard shall also comply with Section 2407. Guards shall also be located along glazed sides of stairways, ramps and landings that are located more than 30 inches (762 mm) above the floor or grade below. Where the glazing provided does not meet the strength and attachment requirements in Section 1607.7.

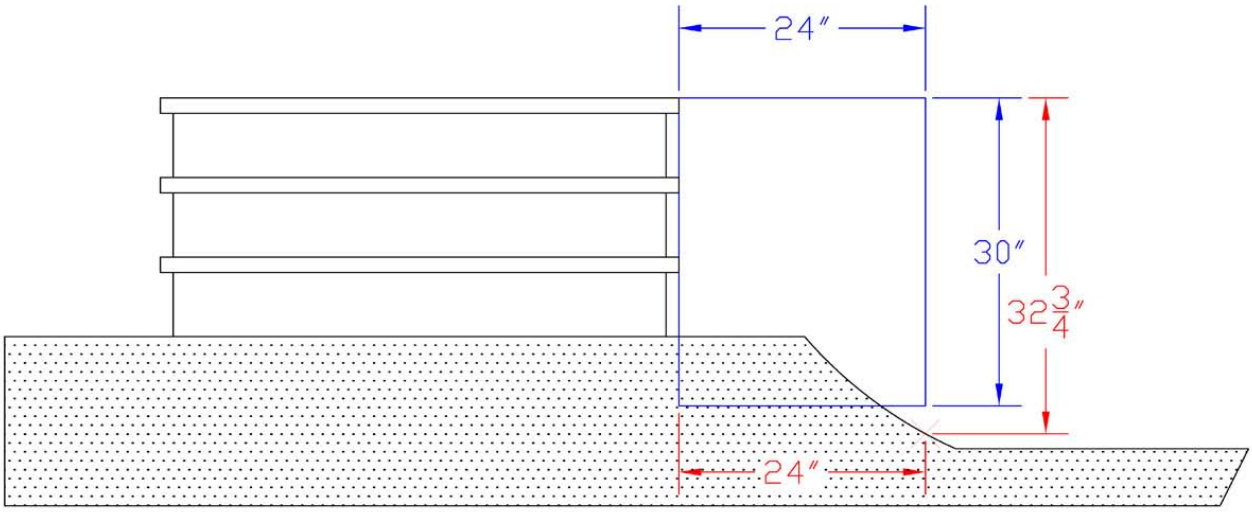
Exception: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2.. On the audience side of stages and raised platforms, including steps leading up to the stage and raised platforms.
3. On raised stage and platform floor areas such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating where guards in accordance with Section 1025.14 are permitted and provided.

Reason: The purpose of the code change is to provide fixed points for measuring the 30 inch vertical riser height of elevated surfaces to determine if guards are required.

Though Sections 1013.1 and R312.1 state that guards are required when the walking surface is 30 inches or more above the walking surface below. it does not define clearly were to measure that vertical measurement. This proposed code change gives a set of parameters as to where to make the measurements. The author used the 24 inch measurement that is published in the BOCA 1996 building code, section 1825.0 retaining walls, section 1825.5 guards, as the determining distance or point of reference for when retaining walls where required to have guards.

The diagram below was drawn by the author and is shown as a visual guide or technical drawing. The drawing shows a 3 riser front entry stoop with 7-3/4" risers from a front elevation. The ground is detailed in outlined dots. The 24" horizontal with 30" vertical box shows the area in which the code change submits the measurements should be taken. The 32-3/4" vertical point shows the deepest point within the 24" horizontal edge measurement.



Thus if this stoop was on a home it would require a guard be installed on the right side only as the left side is not 30 inches or more deep.

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

Committee Action: **Disapproved**

Committee Reason: This proposal is a good idea and is needed for sloped sites. However, the measurement is confusing. This should be incorporated in the guard recommendations from CTC.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Justin Nielsen, City of Thornton, Colorado, requests Approval as Modified by this public comment for Part I.

Replace proposal with the following:

1013.1 Where required. Guards shall be located along open-sided walking surfaces, mezzanines, industrial equipment platforms, stairways, ramps, and landings which are located more than 30 inches (762 mm) above the floor or grade below. The height of all raised floor surfaces or open side of stairs, for purposes of this section, shall be measured from any point on the grade below within 36 inches horizontally of the edge of such raised floor surface or open side of stairs. Guards shall be adequate in strength and attachment in accordance with Section 1607.7. Where glass is used to provide a guard or as a portion of the guard or as a portion of the guard system, the guard shall also comply with Section 2407. Guards shall also be located along glazed sides of stairways, ramps and landings that are located more than 30 inches (762 mm) above the floor or grade below. Where the glazing provided does not meet the strength and attachment requirements in Section 1607.6

Exception: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including steps leading up to the stage and raised platforms.
3. On raised stage an platform floor areas such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating where guards in accordance with Section 1025.14 are permitted and provided.

Commenter's Reason: The original code change proposal was disapproved by committee due to confusion with the proposed language. The above wording is intended to clearly define the extent of the grade below the upper floor surface to be considered in determining the height of the raised floor.

Final Action: AS AM AMPC ____ D

E97-06/07, Part II
R312.1

Proposed Change as Submitted:

Proponent: Thomas B. Zuzik, Jr., Artistic Railings, Inc., representing himself

PART II – IRC BUILDING/ENERGY

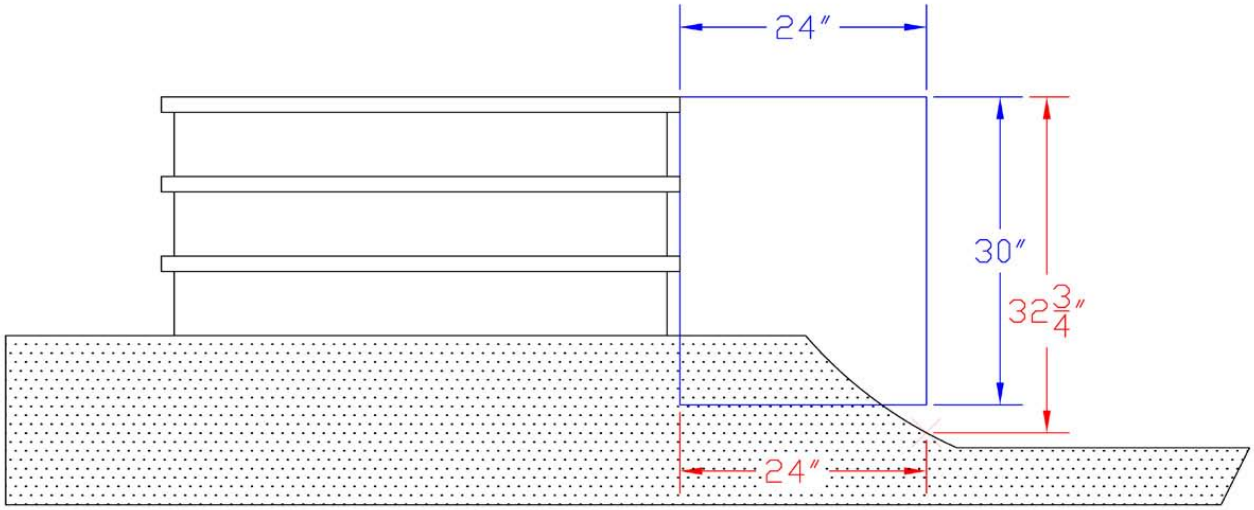
R312.1 Guards. Porches, balconies, ramps or raised floor surfaces located more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 36 inches (914 mm) in height. Open sides of stairs with a total rise of more than 30 inches (762 mm) above the floor or grade below, measured vertically from the edge height of the open-side to the deepest point no more than 24 inches (610 mm) horizontal off the open-side edge, shall have guards not less than 34 inches (864 mm) in height measured vertically from the nosing of the treads.

Porches and decks which are enclosed with insect screening shall be equipped with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

Reason: The purpose of the code change is to provide fixed points for measuring the 30 inch vertical riser height of elevated surfaces to determine if guards are required.

Though Sections 1013.1 and R312.1 state that guards are required when the walking surface is 30 inches or more above the walking surface below. it does not define clearly were to measure that vertical measurement. This proposed code change gives a set of parameters as to where to make the measurements. The author used the 24 inch measurement that is published in the BOCA 1996 building code, section 1825.0 retaining walls, section 1825.5 guards, as the determining distance or point of reference for when retaining walls where required to have guards.

The diagram below was drawn by the author and is shown as a visual guide or technical drawing. The drawing shows a 3 riser front entry stoop with 7-3/4" risers from a front elevation. The ground is detailed in outlined dots. The 24" horizontal with 30" vertical box shows the area in which the code change submits the measurements should be taken. The 32-3/4" vertical point shows the deepest point within the 24" horizontal edge measurement.



Thus if this stoop was on a home it would require a guard be installed on the right side only as the left side is not 30 inches or more deep.

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

Committee Action: **Disapproved**

Committee Reason: The new proposed language reference to "the deepest point" is confusing. This could cause even more issues with drainage areas.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Justin Nielsen, City of Thornton, Colorado, requests Approval as Modified by this public comment for Part II.

Replace proposal with the following:

R312.1 Guards. . Porches, balconies, ramps or raised floor surfaces located more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 36 inches (914 mm) in height. Open sides of stairs with a total rise of more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 34 inches (864 mm) in height measured vertically from the nosing of the treads. The height of all raised floor surfaces or open side of stairs, for purposes of this section, shall be measured from any point on the grade below within 36 inches horizontally of the edge of such raised floor surface or open side of stairs.

Porches and decks which are enclosed with insect screening shall be equipped with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

Commenter's Reason: The original code change proposal was disapproved by committee due to confusion with the proposed language. The above wording is intended to clearly define the extent of the grade below the upper floor surface to be considered in determining the height of the raised floor.

Final Action: AS AM AMPC ____ D

E98-06/07
1013.2 (IFC [B] 1013.2)

Proposed Change as Submitted:

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

Revise as follows:

1013.2 Height. Guards shall form a protective barrier not less than 42 inches (1067 mm) high, measured vertically above the leading edge of the tread, or adjacent walking surface ~~or adjacent seatboard~~. Guards in grandstands, bleachers, and folding and telescopic seating shall comply with ICC 300.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards whose top rail also serves as a handrail shall have a height not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from the leading edge of the stair tread nosing.
2. The height in assembly seating areas shall be in accordance with Section 1025.14.

Reason: The purpose of this code change is to delete the reference to "seatboards" which is understood to be an undefined term previously used in at least one legacy code for addressing guards in grandstands and bleachers. Grandstands, bleachers, etc. are addressed in ICC 300 as currently referenced in 1025.1.1. In the 2002 edition of the ICC 300, the successor term for "seatboard" is "bench seat".

The reason for the code change is to clarify the current code intends that "seatboards' are associated with grandstands, bleachers, etc. and not for benches used for sitting that may be adjacent to a guardrail. With the term "seatboard" undefined, the intent is not clear. The cross reference to ICC 300 refers the code user to the standard where such features are addressed.

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

Analysis: A question would be if the proposed additional sentence would be better located as an exception for consistency with Exception 2 since both are related to types of fixed seating.

Committee Action: **Disapproved**

Committee Reason: In one of the legacy codes "seatboard" was the top row of a bleacher, not a bench. In the current text, this is not clear, so this is an issue that needs to be addressed. However, deletion of the term with only a reference to the ICC 300 standard would not address the similar safety issue found in other tiered seating arrangements.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Thomas Kinsman, T.A. Kinsman Consulting Company, requests Approval as Modified by this public comment.

Modify proposal as follows:

1013.2 Height. Guards shall form a protective barrier not less than 42 inches (1067 mm) high, measured vertically above the leading edge of the tread, or adjacent walking surface ~~or adjacent seat board~~.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards whose top rail also serves as a handrail shall have a height not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from the leading edge of the stair tread nosing.
2. The height in assembly seating areas shall be in accordance with Section 1025.14.

Commenter's Reason: The modified proposal deletes the term "adjacent seat board" because it is an undefined term and therefore causes an unwarranted high liability exposure for design professionals and others in the construction industry. This is the main intent of the proposal.

The modification deletes any reference to ICC 300 which was part of the original proposal. It was originally understood from staff that the term "seat board" related to facilities such as bleachers, grandstands, folding seating, etc. As a result, the ICC 300 document was considered to be the best home for such regulation. However some of the proponents of the comprehensive guard proposal (CTC's E96-06/07) believe the term applies in many instances beyond those covered by the ICC 300 document.
If proponents include clear definition of seat boards in the code (via modification to E96 or other proposal) to the satisfaction of the committee, then the underlying concern of E98-06/07 is resolved. In the interim, the code should not contain such undefined terms.

Final Action: AS AM AMPC ____ D

E101-06/07, Part I
1013.4 (New) [IFC [B] 1013.4 (New)]

Proposed Change as Submitted:

Proponent: Robert D. Lee, Town of Cave Creek, AZ

PART I – IBC MEANS OF EGRESS

Add new text as follows:

1013.4 Climb resistance. Guards are to be constructed in a manner so that they do not contain straight, non-flexible elements greater than 4 inches (102 mm) in length that are within 45 degrees (.79 rad) of horizontal, between 4 inches (102 mm) and 32 inches (813 mm) measured vertically above the adjacent walking surface.

Exceptions:

1. Guards in areas that are not open to the public within occupancies in Group I-3, F, H or S.
2. Guards constructed in accordance with Section 1013.5 (Mechanical equipment).
3. Guards constructed in accordance with Section 1013.6 (Roof access).
4. Guards on stairs.

Reason: While there may be some debate about the data on the relationship between climbable guards and the resulting accidents, there is an immediate need for prescriptive code requirements that are based on the best available data coupled with sound logic and reason. Since the current code provides no restrictions on the climbability of guards, logical reason suggests that guards will be climbed less if they are built in accordance with this code proposal.

This code proposal specifically addresses and limits the use of straight, solid, horizontal guard infill. Most noted are guards commonly referred to as horizontal "pipe rail" guards and outdoor deck guards that are constructed using horizontal S4S members. It is these guards that are among the most climbable and are the most visually inviting to climb, particularly for children that are still within the developmental stages where their sense of danger is not yet fully developed.

This code proposal only limits the most climbable and inviting guards. While these guards only represent a fraction of the guards that are built today, they represent a great majority of guards that can be, and are, climbed by young children.

By limiting this code proposal to “non-flexible elements”, it does not restrict the use of infill constructed of cable, as these guards are much more difficult and less likely to be climbed because of the small size of the members. It is also noted that this proposal does not specifically limit the use of ornamental infill.

45 degrees was chosen as this is the generally recognized distinction between vertical and horizontal.

Many countries around the world restrict climbability of guards with performance language. In our prescriptive code this approach isn’t practical or desirable but the need is the same and this proposal addresses that need.

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

Analysis: A similar code change was proposed Daniel O’Brien. The difference is the degrees from horizontal (i.e., 10-45).

Committee Action: **Disapproved**

Committee Reason: This issue should be deferred to the Code Technologies Committee for a comprehensive submittal along with E102-06/07.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Robert D. Lee, Town of Paradise Valley, representing Arizona Building Official (AZBO) Code Review and Development Committee, requests Approval as Submitted for Part I.

Commenter’s Reason: Part I – IBC: While the Code Technology Committee (CTC) is making every effort to address the climbability of guards, it has many other important subjects to address and each of them takes the time of the committee. The CTC has formed a Study Group that is currently doing a significant, in-depth look at the issues surrounding the climbability of guards and this too will take some time. Deferring to the CTC is not a valid reason for not giving this proposal a fair hearing when it only delays the implementation of a code requirement that will deal with those dangerous guards that are currently being built within the code. One doesn’t need the CTC or its Study Group to know that small children will climb a guard if the elements of that guard are arranged in a repetitive horizontal manner. This proposal doesn’t address decorative ornamental iron patterns, or cable rails, or other designs that don’t create that repetitive horizontal pattern. This proposal does address those guards commonly known as “pipe rail” guards that do create that repetitive horizontal pattern. This proposal will restrict the construction of these dangerous guards until the CTC and its Study Group can submit a more comprehensive proposal.

While proposal E102 – 06/07 is well intended and nearly identical to this proposal, the prohibition to horizontal elements ending at 10° is not enough to make the guard significantly less climbable than a guard composed of truly horizontal elements.

Public Comment 2:

Todd Daniel, National Ornamental & Miscellaneous Metals Association, requests Disapproval for Part I.

Commenter’s Reason: Part 1 - IBC

The National Ornamental and Miscellaneous Metals Association (NOMMA) agrees with the Committee's decision to disapprove this change. As noted by the committee this issue is presently under extensive review by the ICC’s own Code Technology Committee since Spring of 2005 and continues to be under review by the CTC. The proponent has produced no supporting data to support this restrictive of a code change

Final Action: AS AM AMPC ____ D

E101-06/07, Part II
IRC R312.3 (New)

Proposed Change as Submitted:

Proponent: Robert D. Lee, Town of Cave Creek, AZ

PART II – IRC BUILDING/ENERGY

Add new text as follows:

R312.3 Climb resistance. Guards are to be constructed in a manner so that they do not contain straight, non-flexible elements greater than 4 inches (102mm) in length that are within 45 degrees (.79 rad) of horizontal, between 4 inches (102 mm) and 32 inches (813 mm) measured vertically above of the adjacent walking surface.

Exception: Guards on the open sides of stairs.

Reason: While there may be some debate about the data on the relationship between climbable guards and the resulting accidents, there is an immediate need for prescriptive code requirements that are based on the best available data coupled with sound logic and reason. Since the current code provides no restrictions on the climbability of guards, logical reason suggests that guards will be climbed less if they are built in accordance with this code proposal.

This code proposal specifically addresses and limits the use of straight, solid, horizontal guard infill. Most noted are guards commonly referred to as horizontal "pipe rail" guards and outdoor deck guards that are constructed using horizontal S4S members. It is these guards that are among the most climbable and are the most visually inviting to climb, particularly for children that are still within the developmental stages where their sense of danger is not yet fully developed.

This code proposal only limits the most climbable and inviting guards. While these guards only represent a fraction of the guards that are built today, they represent a great majority of guards that can be, and are, climbed by young children.

By limiting this code proposal to "non-flexible elements", it does not restrict the use of infill constructed of cable, as these guards are much more difficult and less likely to be climbed because of the small size of the members. It is also noted that this proposal does not specifically limit the use of ornamental infill.

45 degrees was chosen as this is the generally recognized distinction between vertical and horizontal.

Many countries around the world restrict climbability of guards with performance language. In our prescriptive code this approach isn't practical or desirable but the need is the same and this proposal addresses that need.

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

Analysis: A similar code change was proposed Daniel O'Brien. The difference is the degrees from horizontal (i.e., 10-45).

Committee Action: **Disapproved**

Committee Reason: This proposed change to limit the straight non-flexible elements greater than 4 inches in length in guards that are within 45 degrees of horizontal is too restrictive.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Robert D. Lee, Town of Paradise Valley, representing Arizona Building Official (AZBO) Code Review and Development Committee, requests Approval as Submitted for Part II.

Commenter's Reason: Part II – IRC: Small children will climb a guard if the elements of that guard are arranged in a repetitive horizontal manner and if those horizontal elements are so large as to obscure their view. This proposal does restrict these dangerous guards commonly know as "pipe rail" guards without affecting the majority of safe guards that are built every day. This proposal doesn't address decorative ornamental iron patterns, or cable rails, or other designs that don't create that repetitive horizontal pattern so is not "too restrictive" at all.

Public Comment 2:

Todd Daniel, National Ornamental & Miscellaneous Metals Association, requests Disapproval for Part II.

Commenter's Reason: Part II IRC The National Ornamental and Miscellaneous Metals Association (NOMMA) agrees with the Committee's decision to disapprove this change. As noted by the committee this issue is presently under extensive review by the ICC's own Code Technology Committee since Spring of 2005 and continues to be under review by the CTC. The proponent has produced no supporting data to support this restrictive of a code change.

Final Action: AS AM AMPC ____ D

E105-06/07

1014.2.2, 1014.2.3 through 1014.2.5 (New) [IFC [B] 1014.2.2, [B] 1014.2.3 through [B] 1014.2.5 (New)]

Proposed Change as Submitted:

Proponent: John Williams, Construction Review Services, Washington State Department of Health

Delete and substitute as follows:

1014.2.2 Group I-2. Habitable rooms or suites in Group I-2 occupancies shall have an exit access door leading directly to a corridor.

Exceptions:

1. Rooms with exit doors opening directly to the outside at ground level.
2. Patient sleeping rooms are permitted to have one intervening room if the intervening room is not used as an exit access for more than eight patient beds.
3. Special nursing suites are permitted to have one intervening room where the arrangement allows for direct and constant visual supervision by nursing personnel.
4. For rooms other than patient sleeping rooms located within a suite, exit access travel from within the suite shall be permitted through one intervening room where the travel distance to the exit access door is not greater than 100 feet (30 480 mm).
5. For rooms other than patient sleeping rooms located within a suite, exit access travel from within the suite shall be permitted through two intervening rooms where the travel distance to the exit access door is not greater than 50 feet (15 240 mm).

Suites of sleeping rooms shall not exceed 5,000 square feet (465 m^2). Suites of rooms other than patient sleeping rooms shall not exceed 10,000 square feet (929 m^2). Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93 m^2) shall have at least two exit access doors remotely located from each other. Any room or suite of rooms other than patient sleeping rooms of more than 2,500 square feet (232 m^2) shall have at least two access doors remotely located from each other. The travel distance between any point in a Group I-2 occupancy and an exit access door in the room shall not exceed 50 feet (15 240 mm). The travel distance between any point in a suite of sleeping rooms and an exit access door of that suite shall not exceed 100 feet (30 480 mm).

1014.2.3 Suites in patient sleeping areas. Patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites if one of the following conditions is met:

1. The intervening room within the suite is not used as an exit access for more than eight patient beds.
2. The arrangement of the suite allows for direct and constant visual supervision by nursing personnel.

1014.2.3.1 Area. Suites of sleeping rooms shall not exceed 5,000 square feet (465 m2).

1014.2.3.2 Exit access. Any patient sleeping room, or any suite that includes patient sleeping rooms, of more than 1,000 square feet (93m^2) shall have at least two exit access doors remotely located from each other.

1014.2.3.3 Travel distance. The travel distance between any point in a suite of sleeping rooms and an exit access door of that suite shall not exceed 100 feet (30 480 mm).

1014.2.4 Suites in areas other than patient sleeping areas. Areas other than patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites.

1014.2.4.1 Area. Suites of rooms, other than patient sleeping rooms, shall not exceed 10,000 square feet (929 m^2).

1014.2.4.2 Exit access. Any room or suite of rooms, other than patient sleeping rooms, of more than 2,500 square feet (232 m2) shall have at least two access doors remotely located from each other.

1014.2.4.3 One intervening room. For rooms other than patient sleeping rooms, suites of rooms are permitted to have one intervening room if the travel distance within the suite to the exit access door is not greater than 100 feet (30480mm).

1014.2.4.4 Two intervening rooms. For rooms other than patient sleeping rooms located within a suite, exit access travel from within the suite shall be permitted through two intervening rooms where the travel distance to the exit access door is not greater than 50 feet (15 240 mm).

1014.2.5 Travel distance. The travel distance between any point in a Group I-2 occupancy room and an exit access door in that room shall not exceed 50 feet (15 240 mm).

Reason: This amendment serves to clarify the existing language to help designers and code enforcement personnel understand the current requirements.

The existing text is covers two main concepts:

- Suites that contain patient sleeping areas; and,
- Suites that do not contain patient sleeping areas.

The requirements for each of these concepts are different, but they are not arranged consecutively. The proposed change clarifies the language by grouping the requirements for these two primary concepts into consecutive sections of code.

Exception 1, 2 and 3 moved. The benefit of allowing the use of suites is the ability to have intervening rooms. These two exceptions provide the only instances where intervening room is acceptable for patient sleeping areas. Therefore, they also define the only acceptable conditions for a sleeping suite. These exceptions are reworded and moved to the "sleeping suite" area (1014.2.3.x) of the proposed code.

Exception 4 and 5 moved. These exceptions deal with non sleeping suites and have been moved to the "non sleeping suite" area (1014.2.4.x) of the proposed code.

There are no intended changes to the actual requirements. This proposal is intended to rearrange and put logical breaks into a long and confusing section of code.

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

Committee Action: **Approved as Submitted**

Committee Reason: The proposal provides a logical order for the separation of different types of suites found in hospitals and will help clarify requirements for means of egress.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

John Williams, Washington State Department of Health – Construction Review Services, requests Approval as Modified by this public comment.

Modify proposal as follows:

1014.2.3 Suites in patient sleeping areas. Patient sleeping areas in Group I-2 Occupancies shall be permitted to be divided into suites <u>with one intervening room</u> if one of the following conditions is met:

1. The intervening room within the suite is not used as an exit access for more than eight patient beds.
2. The arrangement of the suite allows for direct and constant visual supervision by nursing personnel.

(Portions of the proposal not shown remain unchanged)

Commenter's Reason: This modification clarifies that suites in patient sleeping areas are allowed only one intervening room between the patient sleeping areas and an exit access corridor. As written, the restriction to one intervening room is too vague and would cause confusion. This change is consistent with the federal requirements for Medicare certification.

Public Comment 2:

John Williams Washington State Department of Health – Construction Review Services, requests Approval as Modified by this public comment.

Modify proposal as follows:

1014.2.5 Travel distance. The travel distance between any point in a Group I-2 Occupancy <u>patient sleeping</u> room and an exit access door in that room shall not exceed 50 feet (15,240 mm).

(Portions of proposal not shown remain unchanged)

Commenter's Reason: The slowest evacuation rate in an I-2 occupancy is in patient sleeping areas, due to the equipment and support functions that must be moved with the patient when they are evacuated. Other common accessory uses in a hospital; such as supply rooms, dining rooms, gyms; do not have this complication. This change is consistent with the federal requirements for Medicare certification.

Final Action: AS AM AMPC ____ D

E109-06/07
1014.3 (IFC [B] 1014.3)

Proposed Change as Submitted:

Proponent: Maureen Traxler, City of Seattle, Washington, representing City of Seattle, Department of Planning and Development

Revise as follows:

1014.3 Common path of egress travel. In occupancies other than Groups H-1, H-2 and H-3, the common path of egress travel shall not exceed 75 feet (22 860 mm). In Group H-1, H-2 and H-3 occupancies, the common path of egress travel shall not exceed 25 feet (7620 mm). For common path of egress travel in Group A occupancies having fixed seating, see Section 1025.8.

Exceptions:

1. The length of a common path of egress travel in Group B, F and S occupancies shall not be more than 100 feet (30 480 mm), provided that the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. Where a tenant space in Group B, S and U occupancies has an occupant load of not more than 30, the length of a common path of egress travel shall not be more than 100 feet (30 480 mm).
3. The length of a common path of egress travel in a Group I-3 occupancy shall not be more than 100 feet (30 480 mm).
4. The length of a common path of egress travel in a Group R-2 occupancy shall not be more than 125 feet (38 100 mm), provided that the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.
5. The common path of egress travel is not limited in buildings that comply with Section 1019.2.

Reason: Common path of egress travel is measured to the place where two paths to two exits are available. An exception for buildings with a single exit is necessary because the common path requirements can never be satisfied within some buildings. Those that comply with Table 1019.2 already meet or exceed the requirements for common path of egress travel. However, this section, as currently written, would force a second exit in buildings complying with Item 2 or 3 of Section 1019.2 (Group R-3 occupancies or single-level buildings with the occupied space at the level of exit discharge, for example), even though the building only needs one exit under Section 1019.2. Under this proposal, these buildings will be allowed to maintain their single exit, but Section 1016 will still limit exit access travel distance.

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

Committee Action: **Disapproved**

Committee Reason: There is no common path of travel requirements in single exit spaces. The change is not needed.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Maureen Traxler, City of Seattle, representing City of Seattle, Department of Planning and Development requests Approval as Modified by this public comment.

Modify proposal as follows:

1014.3 Common path of egress travel. In occupancies where two or more exits are required, other than Groups H-1, H-2 and H-3, the common path of egress travel shall not exceed 75 feet (22 860 mm). In Group H-1, H-2 and H-3 occupancies, the common path of egress travel shall not exceed 25 feet (7620 mm). For common path of egress travel in Group A occupancies having fixed seating, see Section 1025.8.

Exceptions:

1. The length of a common path of egress travel in Group B, F and S occupancies shall not be more than 100 feet (30 480 mm), provided that the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. Where a tenant space in Group B, S and U occupancies has an occupant load of not more than 30, the length of a common path of egress travel shall not be more than 100 feet (30 480 mm).

3. The length of a common path of egress travel in a Group I-3 occupancy shall not be more than 100 feet (30 480 mm).
4. The length of a common path of egress travel in a Group R-2 occupancy shall not be more than 125 feet (38 100 mm), provided that the building is protected throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.
~~5. The common path of egress travel is not limited in buildings that comply with Section 1019.2.~~

Commenter's Reason: The reason stated for disapproval of E109-06/07 is that there is no common path of egress travel requirement for single exit spaces. This proposed modification makes that provision explicit.

Final Action: AS AM AMPC ____ D

E122-06/07

1016.1, 1019.1, 1020.1 (IFC [B] 1016.1, [B] 1019.1, [B] 1020.1)

Proposed Change as Submitted:

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

Revise as follows:

1016.1 Travel distance limitations. Exits shall be so located on each story such that the maximum length of exit access travel, measured from the most remote point within a story to the entrance to an exit along the natural and unobstructed path of egress travel, shall not exceed the distances given in Table 1016.1.

Where the path of exit access includes unenclosed stairways or ramps within the exit access ~~or includes unenclosed exit ramps or stairways as permitted in Section 1020.1~~, the distance of travel on such means of egress components shall also be included in the travel distance measurement. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.

Exceptions:

1. Travel distance in open parking garages is permitted to be measured to the closest riser of open stairs.
2. In outdoor facilities with open exit access components and open exterior stairs or ramps, travel distance is permitted to be measured to the closest riser of a stair or the closest slope of the ramp.
3. ~~Where an exit stair is permitted to be unenclosed in accordance with Exception 8 or 9 of Section 1019.1, the travel distance shall be measured from the most remote point within a building to an exit discharge.~~ In other than occupancy Groups H and I, the exit access travel distance to a maximum of 50 percent of the exits is permitted to be measured from the most remote point within a building to an exit discharge using unenclosed stairways or ramps when connecting a maximum of 2 stories. The two connected stories shall be provided with at least two means of egress. Such interconnected stories shall not be open to other stories. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.
4. In other than occupancy Groups H and I, exit access travel distance is permitted to be measured from the most remote point within a building to an exit discharge using unenclosed stairways or ramps in the first and second stories in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3..1.1.The first and second stories shall be provided with at least two means of egress. Such interconnected stories shall not be open to other stories. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.

1019.1 Minimum number of exits. All rooms and spaces within each story shall be provided with and have access to the minimum number of approved independent exits required by Table 1019.1 based on the occupant load of the story, ~~except as modified in Section 1015.1 or 1019.2~~. For the purposes of this chapter, occupied roofs shall be provided with exits as required for stories. The required number of exits from any story, basement or individual space shall be maintained until arrival at grade or the public way.

Exceptions:

1. As modified by Section 1015.1.
2. As modified by Section 1019.2.

3. Rooms and spaces within each story provided with and having access to a means of egress that complies with Exception 3 or 4 in Section 1016.1 shall not be required to be provide the minimum number of approved independent exits required by Table 1019 on each story.

1020.1 Enclosures required. Interior exit stairways and interior exit ramps shall be enclosed with fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the exit enclosure shall include any basements but not any mezzanines. An exit enclosure shall not be used for any purpose other than means of egress.

Exceptions:

1. In all occupancies, other than Group H and I occupancies, a stairway is not required to be enclosed when the stairway serves an occupant load of less than 10 and the stairway complies with either Item 1.1 or 1.2. In all cases, the maximum number of connecting open stories shall not exceed two.
   1.1. The stairway is open to not more than one story above the story at the level of exit discharge; or
   1.2. The stairway is open to not more than one story below the story at the level of exit discharge.
2. Exits in buildings of Group A-5 where all portions of the means of egress are essentially open to the outside need not be enclosed.
3. Stairways serving and contained within a single residential dwelling unit or sleeping unit in Group R-1, R-2 or R-3 occupancies are not required to be enclosed.
4. ~~Stairways that are not a required means of egress element are not required to be enclosed where such stairways comply with Section 707.2.~~
5. Stairways in open parking structures that serve only the parking structure are not required to be enclosed.
6. Stairways in Group I-3 occupancies, as provided for in Section 408.3.6, are not required to be enclosed.
7. Means of egress stairways as required by Section 410.5.3 are not required to be enclosed.
8. ~~In other than Group H and I occupancies, a maximum of 50 percent of egress stairways serving one adjacent floor are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Any two such interconnected floors shall not be open to other floors. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.~~
9. ~~In other than Group H and I occupancies, interior egress stairways serving only the first and second stories~~
   ~~of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Such interconnected stories shall not be open to other stories. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.~~

Reason: There appears to be two distinct egress concepts that though integrally tied, are being confused. How exit access travel distance is measured (Section 1016.1) and when exits are required to be enclosed in fire rated constructions (Section 1020.1).

Section 1016.1 is intended to tell the code user how to measure “exit access travel distance” , e.g., from the most remote point on a story to an “exit.” Section 1020.1 tells the code user that all exits are to be enclosed in fire rated construction, and more importantly, the conditions when an exit is not required to be enclosed in fire rated construction. In multiple story buildings, that “exit” is typically an interior stairway or an exterior stairway, separated from the remainder of the story by fire rated construction.

Through past code change activity, the membership has accepted the concept that exit access travel distance does not always have to terminate at an “exit” which is located on that story, but under certain circumstances (those found in Exceptions 8 & 9 in Section 1020.1) can continue down a vertical egress element until the exit access travel distance is exceeded. At that point, regardless of where within the building the person is they must enter an “exit” that is enclosed in fire rated construction.

We do not disagree with the concept of allowing the exit access travel distance to continue past what has traditionally been the termination point, the top of a stairway. But we do feel that code, as currently written in Sections 1016.1 and 1020.1, does not accurately depict the concept. Rather than making the allowance for exit access travel distance to extend past the story in which it started in Section 1016.1, the code has made exceptions to when a vertical exit is required to be enclosed in Section 1020.1.

The proposed language here, and in Section 1020.1, seeks to clarify the application of this concept. The exceptions now found in Section 1020.1 are proposed for deletion and relocated into Section 1016.1. In addition, the current arrangement of the concept of measuring exit access travel distance has created confusion with regard to the application of other provisions within the code, e.g., enclosure of exit access corridors, levels of exit discharge, exit passageways.

Regarding the deletion of Exception 4: Section 1020 is only applicable to “vertical exit enclosures.” One would not even look to Section 1020 for a stair that is not an “exit.” Openings created by stairs that are not exits are not treated unlike any other opening in a floor assembly. They are classified as “openings” in horizontal assemblies and subject to the applicable provisions for such, potentially shaft enclosures or classification as an atrium. Retaining the text of Exception 4 is misleading as it seems to imply that stairs that are not exits are in some way regulated by the provisions of Section 1020 when this is untrue. The proposed deletion of Exception 4 removes any possible confusion.

The intent of the revision to Section 1019.1 is to address the concern over two exit access stairways being provided from a 2nd floor when two exits were required. This is basically a correlation issue.

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

Committee Action: **Approved as Modified**

Modify proposal as follows:

1016.1 Travel distance limitations. Exits shall be so located on each story such that the maximum length of exit access travel, measured from the most remote point within a story to the entrance to an exit along the natural and unobstructed path of egress travel, shall not exceed the distances given in Table 1016.1.

Where the path of exit access includes unenclosed stairways or ramps within the exit access the distance of travel on such means of egress components shall also be included in the travel distance measurement. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.

Exceptions:

1. Travel distance in open parking garages is permitted to be measured to the closest riser of open stairs.
2. In outdoor facilities with open exit access components and open exterior stairs or ramps, travel distance is permitted to be measured to the closest riser of a stair or the closest slope of the ramp.
3. In other than occupancy Groups H and I, the exit access travel distance to a maximum of 50 percent of the exits is permitted to be measured from the most remote point within a building to an exit ~~discharge~~ using unenclosed stairways or ramps when connecting a maximum of 2 stories. The two connected stories shall be provided with at least two means of egress. Such interconnected stories shall not be open to other stories. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.
4. In other than occupancy Groups H and I, exit access travel distance is permitted to be measured from the most remote point within a building to an exit ~~discharge~~ using unenclosed stairways or ramps in the first and second stories in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3..1.1.The first and second stories shall be provided with at least two means of egress. Such interconnected stories shall not be open to other stories. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stairway.

(Portions of proposal not shown remain unchanged)

Committee Reason: The proposal moves exit access requirements out of the current exit requirements in Section 1020.1 and into the correct location, Section 1016.1. This clarifies the limits for the open stairways that are part of the means of egress and their use in the building. The modification deleted the term 'discharge' from Section 1016.1 in Exceptions 3 and 4. Travel down the open exit access stairways could lead to an enclosed exit stairway, and not always directly to the door to the outside (i.e. exit discharge).

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Anne vonWeller, Murray City Corporation, representing Utah Chapter ICC, requests Disapproval.

Commenter's Reason: The proposal moves two exceptions for interior exit stairways from the exit enclosure provisions to exceptions for travel distance. Admittedly, travel distance is a very important issue related to unenclosed stairways, but by removing the provisions from those for interior exit stairways and making them exceptions to travel distance will only result in misapplication and further confusion. How many users looking for the requirements for unenclosed stairways will seek them under travel distance?

Are unenclosed stairways exits? Exit access? Are they something else with characteristics of both? The debate continues, but unenclosed stairways are definitely not travel distance.

The proposed language in section 1016.1 exceptions 3 and 4 states, "travel distance is permitted to be measured from the most remote point within a building to an exit" along the stairway. Why would anyone volunteer to be penalized when the 2006 edition in Section 1016.1 says travel distance is only required to be measured on each story. We doubt that was the intent of the code, but it isn't clear and the new language makes it worse.

Proposed exception 3 to 1019.1 is so confusing, it seems to say one doesn't have to provide required exits as long as exceptions 3 and 4 to Section 1016.1 are met. Each of those exceptions only requires two means of egress. What happened to a required 3rd or 4th exit on stories with large occupant loads and unenclosed stairways? Are the other two exits not required?

The proponent submitted this representing it as clarification and correlation, but this convoluted and flawed path of moving stairway provisions into travel distance provisions and adding exceptions referring to exceptions in other sections is not the least helpful.

Final Action: AS AM AMPC ____ D

E127-06/07
Table 1017.1 (IFC [B] Table 1017.1)

Proposed Change as Submitted:

Proponent: Lorin Neyer, Office of Statewide Health, Planning & Development, State of California, representing California Fire Chief's Association

Revise table as follows:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		~~Without sprinkler system~~	~~With sprinkler~~ [c] ~~system~~
H-1, H-2, H-3	All	~~Not Permitted~~	1
H-4, H-5	Greater than 30	~~Not Permitted~~	1
A, B, E, F, M, S, U	Greater than 30	~~1~~	~~0~~ 1
R	Greater than 10	~~1~~	~~0.5~~ 1
I-2[a], I-4	All	~~Not Permitted~~	~~0~~ 1
I-1, I-3	All	~~Not Permitted~~	1[b]

a. For requirements for occupancies in Group I-2, see Section 407.3.
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.
~~c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.~~

Reason: This proposed amendment eliminates the automatic sprinkler system trade-off for corridors and reinstates the one hour fire resistance rating requirement for corridors in all occupancies.

The 2006 *International Building Code* allows the use of non-fire resistance rated corridors (less than 1-hour fire resistance rating) to a much greater extent than the 1997 Uniform Building Code (UBC) currently adopted by California. In many cases the required 1-hour fire resistance rating for corridors is traded-off for the installation of an automatic sprinkler system. We do not believe that such trade-offs are appropriate where life safety is concerned. In such cases, it is advantageous and desirable to maintain the built-in passive fire resistant protection, as well as to provide the active automatic sprinkler system protection, where life safety is involved. In our opinion, trade-offs are entirely inappropriate where life safety is concerned. We believe that a balanced approach should be used to assure that the appropriate level of life safety will be provided to the occupants of the building who must rely upon the corridors to exit the building.

A secondary benefit of 1-hour fire resistance rated corridors is that they also assist fire fighters in doing their job by providing a protected means of access to the interior of the building where they can perform their search and rescue missions, as well as fire fighting operations, in relative safety. Fire resistance rated corridors can provide fire fighters with additional time to do their jobs more effectively and safely.

We strongly believe that sprinkler trade-offs should not be allowed for means of egress components. In California we are especially concerned because of the high probability of severe earthquakes occurring which can knock out the water supply to the sprinkler system. At present, neither the UBC nor the IBC allow sprinkler trade-offs for the fire resistance ratings required for exit stair enclosures, horizontal exits, and exit passageways. So why should sprinkler trade-offs be allowed for the 1-hour fire resistance rating of corridors which provide a protected egress path giving access to these exit elements?

Furthermore, other sprinkler trade-offs related to the means of egress in buildings have already been provided for in the IBC. For example, travel distance is allowed to be increased where automatic sprinkler systems are provided. The separation of exits (remoteness) is also allowed to be reduced where automatic sprinkler systems are installed. Interior finish requirements are relaxed within corridors where Class C interior finish can be used in lieu of Class B interior finish and Class B interior finish can be used where Class A interior finish would otherwise be required if not for the installation of automatic sprinklers. And in certain occupancies dead end corridors are allowed to be increased in length by as much as 150%, i.e. from 20 feet to 50 feet, where automatic sprinkler systems are provided.

We are concerned that the compounding effect of sprinkler trade-offs could lead to greater risk to the life safety of the building occupants, especially if combined with a reduction in or the elimination of the 1-hour fire resistance rating for corridors providing access to the exits or the exit stairs. Too much reliance on automatic sprinkler systems may not be wise where life safety is a key consideration. We strongly believe that a balanced approach to fire and life safety in buildings should be provided to greatly enhance the probability that the intended level of fire and life safety prescribed by the building code will be provided when a fire occurs, even if something should go wrong.

We acknowledge that automatic sprinkler systems are an important fire protection tool, but they are not infallible. Like any mechanical system, they are subject to failure. In fact, a recent statistical analysis of automatic sprinkler system performance conducted by the NFPA has concluded that automatic sprinkler systems fail to activate in at least 1 out of every 6 fires that occur in sprinklered buildings. In our opinion such a level of performance does not justify trading-off built-in fire resistant protection for the means of egress in buildings where the occupant's lives are at risk in a fire emergency. A balanced design approach of providing built-in fire resistive protection in conjunction with automatic sprinkler protection, in our opinion, will go a long way toward assuring that the level of fire and life safety intended by the building code will be delivered during a fire emergency.

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

Committee Action: **Disapproved**

Committee Reason: Justification was not provided to substantiate the need for this substantial change for corridor rating for all the uses listed. A modification was offered concentrating on Groups I-2 and I-4. Hospitals have good fire records and Group I-2 have requirements or smoke barriers in Section 407.3. NFPA was cited as requiring a 1/2 hour rated corridor in hospitals, however, NFPA only has this requirement for non-sprinklered hospitals.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Laura Blaul and Lorin Neyer, Orange County Fire Authority/California Office of Statewide Health Planning & Development, representing California Fire Chief's Association, requests Approval as Modified by this public comment.

Replace proposal with the following:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler [c] system
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, ~~E~~, F, M, S, U	Greater than 30	1	0
E	Greater than 30	1	1
R	Greater than 10	1	0.5
I-2[a], I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1[b]

(No change to footnotes)

Commenter's Reason: This Public Comment modifies our original code change proposal to focus on requiring all corridors serving an occupant load greater than 30 to meet the requirement for 1-hour fire-resistance rated corridors in Group E educational occupancies except as allowed by Exception 1 to Section 1016.1. Presently, the International Building Code (IBC) allows the 1-hour fire-resistance rated corridor to be omitted where the building is protected by an automatic sprinkler system. We don't believe that such a trade-off is appropriate, especially in an educational occupancy where there are large numbers of children at relatively high density who are placed at risk in a fire situation. We believe that a balanced design approach to providing life safety in educational occupancies is prudent so that the 1-hour fire-resistance rated corridors can work in conjunction with the automatic sprinkler system to assure the level of life safety for the building's occupants intended by the code.

Although sprinklers are a valuable fire protection tool, they are not infallible nor can they be assured of providing the necessary degree of protection to allow a 1-hour reduction in fire-resistance for the corridors. A recent analysis of sprinkler system performance by William E. Koffel, P.E. of Koffel Associates has indicated that sprinklers failed to perform satisfactorily in at least 1 out of every 9 fires that occur in sprinklered buildings. We believe that such a performance level does not justify deleting or trading-off the 1-hour fire-resistance rating for corridors that provide a protected means of egress for school children in Group E educational occupancies.

Public Comment 2:

Laura Blaul and Lorin Neyer, Orange County Fire Authority/California Office of Statewide Health Planning & Development, representing California Fire Chief's Association, requests Approval as Modified by this public comment.

Replace proposal with the following:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler [c] system
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	1	~~0.5~~ 1
I-2[a], I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1[b]

(No change to the footnotes)

Commenter's Reason: We have submitted this Public Comment to focus on the Group R occupancies for requiring all corridors serving an occupant load greater than 10 to have a minimum fire-resistance rating of 1 hour, even where the building is sprinklered. We believe that the 1 hour fire-resistance rating required for a corridor in Group R occupancies should not be reduced to a ½ hour (30 minute) fire-resistance rating with the installation of an automatic sprinkler system, especially when that sprinkler system need only comply with NFPA 13R which allows for partial sprinklering of the building. We should point out that currently the code will not allow the required separation between adjacent Group R occupancies or sleeping units to be reduced below 1 hour even when an automatic sprinkler system is installed except for buildings of Types IIB, IIIB, and VB construction. But then the fire-resistance rating is allowed to be reduced to ½ hour only if the sprinkler system in installed in accordance with NFPA 13 and not NFPA 13R. Shouldn't corridors for these Group R occupancies have at least the same level of protection as the separations required between the individual occupied spaces in these occupancies?

Furthermore, it becomes difficult to enforce code requirements for ½ hour fire-resistance rated fire partitions since there are no penetration or joint protection systems listed for ½ hour wall assemblies nor are there any fire dampers listed for such wall assemblies. On top of that the ASTM E119 fire-resistance test for walls does not require the hose stream test for any wall that has a fire-resistance rating of less than 1 hour. So the corridor walls can be a very flimsy construction which could not even hold up to a hose stream test conducted after the wall would have been burned for ½ hour to satisfy the requirements in ASTM E119 for a 1-hour wall.

There are very few wall assemblies that have been listed for ½ hour. One of those is UL U319 which only requires one layer of 3/8 inch thick Type X gypsum wallboard on each side of studs. Otherwise, a calculated fire-resistance design could be used in accordance with Section 721.6. Such ½ hour (30 minute) partitions could be constructed of 3/8 inch regular gypsum wallboard installed on both sides of wood studs at 16 inches on center or 15/32 inch plywood or 3/8 inch thick plywood with glass fiber insulation in the stud space (which would actually achieve a 40 minute fire-resistance rating). We don't believe that these types of wall constructions provide adequate fire and smoke protection and structural integrity during a fire exposure condition, especially in the case where the automatic sprinkler system may fail to perform satisfactorily.

In conclusion, we are not aware of many projects where the corridor walls are actually constructed to meet the minimum ½ hour fire-resistance rating. It is just not practical since most projects only use one type of gypsum wallboard to stock the job in order to minimize confusion and improper installation using the wrong type or thickness. So for commercial jobs 5/8 inch Type X gypsum wallboard is generally used throughout the project. When a single layer of 5/8 inch Type X gypsum wallboard is installed on both sides of studs, it achieves a 1 hour fire-resistance rating. So it seems somewhat meaningless and not very cost effective to continue to allow the ½ hour trade-off for an NFPA 13R automatic sprinkler system in Group R occupancies. Therefore, we request the ICC voting membership to approve this code change proposed as modified by this Public Comment to restore the corridor fire-resistance rating in sprinklered Group R occupancies to 1 hour.

Public Comment 3:

Laura Blaul and Lorin Neyer, Orange County Fire Authority/California Office of Statewide Health Planning & Development, representing California Fire Chief's Association, requests Approval as Modified by this public comment.

Replace proposal with the following:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler [c] system
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	1	0.5
I-2[a], I-4	All	Not Permitted	~~0~~ 1
I-1, I-3	All	Not Permitted	1[b]

(No change to footnotes)

Commenter's Reason: We have submitted this Public Comment to focus on the Group I occupancies for requiring all corridors to have a minimum fire-resistance rating of 1 hour, even where the building is sprinklered. We believe that the 1 hour fire-resistance rating required for a corridor in Group I occupancies is appropriate due to the users of theses types of facilities are often of limited mobility, restrained, or completely non ambulatory and relying on staff to exit. This type of exiting requires more time and a rated corridor with opening protection will provide that additional time.

Being dependant on staff alone for safe egress is not appropriate. It has been long understood that in an emergency situation the less we are dependant on human error the better. With the life safety features provided in the current code for these occupancies we are heavily dependant on staffing levels. There are very few states that have minimum staffing levels in hospitals, let alone residential facilities. The NFPA and Joint Commission on Healthcare Accreditation, both promote the RACE concept for staff to follow. RACE is Rescue, Alarm, Contain, Extinguish. We have seen many fires in these facilities where the staff is doing good to get the rescue accomplished on their own, remember these are not first responders, they are health care providers, training in this area is limited and they often find themselves having to move a patient twice their size. Training of this type in an I-4 is likely non-existent. These staff members take on the responsibility of actually having to move several patients during a fire event and that will likely be the first time they see a fire up close enough that it will effect their own breathing not to mention that of the patient or elderly resident. With non-rated walls with non-protected openings, there is little chance that a staff person would have time to attempt the contain or extinguish elements of the RACE program. For fire and smoke damage to be allowed to migrate throughout a building unabated is unconscionable, sprinklers may take care of the fire, but not the smoke. A smoke damaged hospital is a closed hospital. How many small communities only have one hospital? If the only hospital in town needed to close for a couple of days to clean up after extensive smoke damage where will they send their patients?

We would like to urge the membership to approve this code change proposal.

Public Comment 4:

Rick Thornberry, P.E. The Code Consortium, Inc., representing the Alliance for Fire and Smoke Containment and Control (AFSCC) requests Approval as Modified by this public comment.

Replace proposal with the following:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler [c] system
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, E, M	Greater than 30	1	1
~~A~~, B, ~~E~~, F, ~~M,~~ S, U	Greater than 30	1	0
R	Greater than 10	1	0.5
I-2[a], I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1[b]

(No change to the footnotes)

Commenter's Reason: The purpose of this Public Comment is to require all corridors serving an occupant load greater than 30 in Groups A, E, and M occupancies to have a 1-hour fire-resistance rating. This will eliminate the sprinkler trade-off that presently allows 1-hour corridors not to be rated where an automatic sprinkler system is provided.

Sprinklers are not foolproof, nor do they perform 100% of the time. In fact, a recent statistical analysis published by William E. Koffel, P.E. Koffel Associates, in January 2006 for sprinkler system performance indicates that sprinkler systems fail to operate satisfactorily in 1 out of every 9 fires that occur in sprinklered buildings. So we should not rely entirely on an automatic sprinkler system to provide the appropriate level of fire and life safety, especially in these occupancies with relatively high occupant loads due to the density of the occupants in these buildings.

Group A assembly occupancies generally contain large numbers of occupants at high densities. These people should be assured that they will have sufficient protection to allow them to exit a burning building without the threat of being overtaken by fire or smoke. In our opinion 1-hour fire-resistance rated corridors should not be allowed to be traded-off for the installation of an automatic sprinkler system since life safety is involved. A balanced approach to life safety is preferable. To achieve balance, built-in fire resistive protection must be maintained in conjunction with automatic sprinkler protection, not traded-off. This approach will assure that a highly reliable level of life safety will be provided even if something should go wrong.

With the ever increasing number of arson fires in today's schools, the likelihood of the sprinkler system being tampered with to defeat it and a malicious fire being set is more significant each year in Group E educational occupancies. We believe it is very important to maintain the 1-hour fire-resistance ratings for the corridors in Group E occupancies where large numbers of children may be impacted by a fire incident, even in a sprinklered building. It is very likely that most school corridor walls are constructed to provide at least a 1-hour fire-resistance rating so that they are physically durable enough to withstand the general day to day abuse they are typically exposed to. So in order to complete the integrity of the corridor walls to protect against fire and smoke spread, it would only be necessary to provide 20 minute smoke and draft control door assemblies with self-closing devices and protection of joints and penetrations in those walls with appropriate through penetration protection systems and joint protection systems as required by Chapter 7 of the IBC. Also, if there are any ducts that penetrate the corridor wall, they would be required to be protected with combination fire and smoke dampers. These protection features will help to contain a fire and its products of combustion including smoke within the room of origin for a sufficient time to allow students to safely egress the building. Certainly, the most important function would be to contain the smoke so that it does not intrude into the corridor and threaten the means of egress system to the point where the students could not negotiate the corridors to reach an exterior exit door or stairway enclosure door.

In Group M mercantile occupancies corridors may be provided to take occupants from the sales floor areas to exits in the back of house and may pass by or through storage areas and other use areas where combustible loading may be very high and represent a potential exposure to the exiting occupants in a fire emergency. We do not believe it is appropriate to allow the 1-hour fire-resistance rating for such corridors to be traded-off for the installation of an automatic sprinkler system where life safety is an issue. This is especially important in mercantile occupancies where there may be very high occupant loads at certain times and the exit corridors may pass by areas containing high fire loads.

We are also concerned that the compounding effect of sprinkler trade-offs could lead to greater risk to the life safety of the building occupants, especially if combined with the elimination of the 1-hour fire-resistance rating for corridors providing access to the exits or the exit stairs. Too much reliance on automatic sprinkler systems may not be wise where life safety is a key consideration. We strongly believe that a balanced approach to fire and life safety in buildings should be provided to greatly enhance the probability that the intended level of fire and life safety prescribed by the building code will be provided when a fire occurs, even if something should go wrong.

We acknowledge that automatic sprinkler systems are an important fire protection tool, but they are not infallible. Like any mechanical system, they are subject to failure. As previously stated, automatic sprinkler systems fail to activate in at least 1 out of every 9 fires that occur in sprinklered buildings. In our opinion such a level of performance does not justify trading-off built-in fire-resistant protection for the means of egress in buildings where the occupant's lives are at risk in a fire emergency. A balanced design approach of providing built-in fire resistive protection in conjunction with automatic sprinkler protection, in our opinion, will go a long way toward assuring that the level of fire and life safety intended by the building code will be delivered during a fire emergency.

Final Action: AS AM AMPC ____ D

E128-06/07
Table 1017.1 (IFC [B] Table 1017.1)

Proposed Change as Submitted:

Proponent: John C. Dean, The National Association of State Fire Marshals

Revise table as follows:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE RESISTANCE RATING (hours)	
		~~Without Sprinkler System~~	~~With Sprinkler System~~[c]
H1-, H-2, H3	All	~~Not Permitted~~	1
H4, H-5	Greater than 30	~~Not Permitted~~	1
A, B, E, F, M, S, U	Greater than 30	~~1~~	~~0~~ 1
R	Greater than 10	~~Not Permitted~~	~~0.5~~ 1
I-2[a], I-4	All	~~Not Permitted~~	~~0~~ 1
I-1, I-3	All	~~Not Permitted~~	1[b]

a. For requirements for occupancies in Group I-2, see Section 408.7.
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.
~~c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.~~

Reason: Evacuation is a primary concern for all safety codes and, as such, the integrity of exit corridors must be maintained in a way that does not rely on a single measure to provide the appropriate level of fire and life safety. The fire resistance ratings, as specified under the "With Sprinkler System" column in Table 1017.1, IBC, place a considerable burden on active fire suppression systems. With the extended evacuation times as a result of larger, taller buildings, it is imperative that these corridors be robust. It is the position of the National Association of State Fire Marshals (NASFM) that **both** active and passive fire protection must be in place at adequate levels to achieve a balanced fire protection environment for safety from fire for the occupants, fire fighters, and other emergency responders. Used together, they can provide a superior level of fire and life safety that neither can provide alone. NASFM finds it problematic that built-in fire resistant protection in corridors has, in many instances, been reduced. The NFPA Life Safety Code does not permit ratings below 1 hour for corridors.

NASFM is not the only organization that has expressed concerns that the built-in fire resistant protection of building elements has, in many cases, been reduced. This position is also supported by the findings in the studies conducted by the National Institute of Standards and Technology (NIST) and the City of New York. According to NIST's June 2004 Progress Report on the Federal Building and Fire Safety Investigation of the World Trade Center Disaster,

> *"While sprinklers improve safety in the most common building fires and prevent them from becoming large fires, the technical basis is not available to establish the sprinkler trade-off in current codes which allows for a lower fire rating to be used for structural components in sprinklered buildings."*[1]

In addition, the NIST 2005 Draft for Public Comment, further states,

> *"The passive fire protection system and the active sprinkler system each provide redundancy for maintaining structural integrity in a building fire, should one of the systems fail to perform its intended function."*[2]

The absence of a proper technical basis for trade-offs is sufficient justification to call for fire-rating requirements to remain stringent. NASFM is sympathetic to the notion of economic incentives to achieve higher levels of safety—which is the justification for trade-offs. But NASFM sees no value in a system of incentives that allows reductions in the levels of safety, or encourages building owners to meet minimum levels of fire protection. While economic realities make the need for *some* trade-offs inevitable, the pendulum has swung too far in favor of economics over safety. Trade-offs that allow for the significant reduction of passive fire protection materials in order to install sprinklers are not supported by the science and clearly do not serve the public interest.[3] In New York City, where the economic aspects of these issues were given a thorough assessment, many trade-offs were rejected.[4] Instead, both passive and active fire protection were given similar weight.

By eliminating the fire resistance rating in corridors due to sprinklers, it must be assumed that sprinklers were thought to have provided the same level of safety. Unfortunately, sprinklers can not perform the same function as passive protection systems. In order for fire sprinklers to function a fire has already occurred. With the fire comes smoke, and impaired visibility. By eliminating the fire resistance rating in corridors several other protective measures are lost as well. Fire rated doors and closers are no longer required. Penetration protection and HVAC dampers disappear; both of which are in areas not typically protected by sprinklers. Smoke migration is a significant problem during fire events. Losing the ability to control the spread of smoke may even present a larger problem than the fire itself. "0" rated corridor walls are not required to be constructed floor to deck, thus creating a plenum for smoke travel. In addition, structural integrity and security can be compromised.

This proposal does not create new values; it merely restores the corridor ratings that existed in prior legacy codes. Without a technical basis to justify the weakening of these public safety standards, and with so much evidence to the contrary, NASFM believes that the ICC can further the efforts for fire safety by adopting this proposal without delay. Even the most open and diverse process does not justify placing narrow economic interests above common sense and dedication to public safety.

[1] Fact Sheet: "Key Findings of NIST's June 2004 Progress Report on the Federal Building and Fire Safety Investigation of the World Trade Center Disaster." Available at http://www.nist.gov/public_affairs/factsheet/wtc_keyfindings.htm
[2] National Institute of Standards and Technology. (2005, September) "Final Report of the National Construction Safety Team on the Collapse of the World Trade Center Towers." (Draft) p. 204 Retrieved from: http://wtc.nist.gov/pubs/NISTNCSTAR1Draft.pdf
[3] A trade-off that creates an incentive for the installation of sprinklers, but also keeps passive requirements at an adequate level is an appropriate compromise. This proposal allows for an hour reduction when sprinklers are installed but does not reduce passive protection to the point where occupant and first responder safety may be in jeopardy, should a sprinkler not activate.
[4] Release No. 160, Office of the Mayor, City of New York. The Task Force "brought together experts from government, the real estate community, and the design and construction professions in an effort to review high-rise building design, construction and operating requirements and identify practical ways to improve the current levels of safety provided by the City's building code."

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

Committee Action: **Disapproved**

Committee Reason: Proper justification was not provided for this substantial change for all the occupancies listed. If the concern is mostly for residential occupancies, as expressed in the testimony, the change should only address corridors in that occupancy. The substantiation stated that corridors are structural - that is not typically the case. There is an incorrect reference in the reason to NFPA insinuating that they require 1 hour rated corridors in sprinklered building.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

John C. Dean, National Association of State Fire Marshals (NASFM), requests Approval as Modified by this public comment.

Replace proposal with the following:

TABLE 1017.1
CORRIDOR FIRE-RESISTANCE RATING

Occupancy	Occupant Load Served by Corridor	Required Fire Resistance Rating (hours)	
		Without sprinkler system	With sprinkler system
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	~~0~~ 1
R	Greater than 30	Not Permitted	0.5
I-2[a], I-4	All	Not Permitted	~~0~~ 1
I-1, I-3	All	Not Permitted	1

a. For requirements for occupancies in Group I-2, see Sections 408.7
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

Commenter's Reason: Evacuation is a primary concern for all safety codes and, as such, the integrity of exit corridors must be maintained in a way that does not rely on a single measure to provide the appropriate level of fire and life safety. The fire resistance ratings, as specified under the "With Sprinkler System" column in Table 1017.1, IBC, place a considerable burden on active fire suppression systems. With the extended evacuation times as a result of larger, taller buildings, it is imperative that these corridors be robust. It is the position of the National Association of State Fire Marshals (NASFM) that **both** active and passive fire protection must be in place at adequate levels to achieve a balanced fire protection environment for safety from fire for the occupants, fire fighters, and other emergency responders.

Used together, they can provide a superior level of fire and life safety that neither can provide alone. NASFM finds it problematic that built-in fire resistant protection in corridors has, in many instances, been reduced.

Today, life-safety concerns must include more than protection from fire and smoke; it must also include safeguarding our employees and children from increasing incidents of armed aggression and physical violence. Increasing the fire-protection rating of corridor walls and partitions in A and E occupancies from no fire-rating at all, in fully sprinklered occupancies, to 1-hour fire-rated construction in these same areas can result in an increase in physical security due, in part, to the requirements for fire-rated walls and partitions to extend from the floor to the deck or roof structure above the ceiling.

Openings in non-fire rated corridor walls and partitions may or may not have door leaves (e.g., passageways, cased-open archways, etc.), creating large, unobstructed and continuous paths of travel which are difficult to maintain physical security within.

Physical security is increased additionally at the door openings in fire-rated walls and partitions due to requirements for door openings (e.g., door leaves, frames and hardware) to be of more substantial construction than door openings in non-fire rated walls and partitions. Fire-rated door openings are required to be self-closing or automatic-closing, thereby ensuring the door leaves will be closed and latched in cases of fire or smoke emergencies. In certain occupancies, fire-rated openings are likely to be secured with locking hardware (e.g., mortise or bored locksets and fire exit hardware, etc.). For example, classroom doors in educational occupancies in 1-hour fire-rated corridor walls will be of sufficient construction to resist fire and smoke for a minimum of 20 minutes and most likely will have locking hardware, which will allow teachers to secure the openings from inside the classroom in situations where stepping into the corridor may place the teachers or students in physical jeopardy.

Tragic incidents of physical violence in public buildings have left us with indelible memories of these occurrences. We believe requiring corridor walls and partitions to be 1-hour fire-rated construction will also provide the occupants with an increased level of physical security.

This proposal does not create new values; it merely restores the corridor ratings that existed in prior legacy codes. Without a technical basis to justify the weakening of these public safety standards, and with so much evidence to the contrary, NASFM believes that the ICC can further the efforts for fire safety by adopting this proposal without delay. Even the most open and diverse process does not justify placing narrow economic interests above common sense and dedication to public safety.

Proposal E128 -06/07 has been modified to address the concerns of the Committee regarding R occupancies and to provide the protective features outlined in Section 708 in all occupancies

Public Comment 2:

William M. Connolly, State of New Jersey, Department of Community Affairs, Division of Codes and Standards, and Bill McHugh, Firestop Contractors International Association requests Approval as Modified by this public comment.

Replace proposal with the following:

1017.1 Construction. Corridors shall be fire-resistance-rated as described below ~~in accordance with Table 1017.1~~. The corridor walls ~~required to be fire-resistance rated~~ shall comply with Section 708 for fire partitions.

1. Corridors in Group H-1, H-2, and H-3 occupancies shall have a fire-resistance rating of 1 hour.
2. Corridors in Group H-4 and H-5 occupancies with an occupant load greater than 30 shall have a fire-resistance rating of 1 hour.

3. Corridors in Group A, B, E, F, M, S, U occupancies with an occupant load greater than 30 shall have a fire-resistance rating of 1 hour.
4. Corridors in Group R occupancies with an occupant load greater than 10 shall have a fire-resistance rating of 0.5 hours.
5. Corridors in Group I-2 and I-4 occupancies shall have a fire-resistance rating of 1 hour.
6. Corridors in Group I-1 and I-3 occupancies shall have a fire-resistance rating of 1 hour.

Exceptions:

1. A fire-resistance rating is not required for corridors in an occupancy in Group E where each room that is used for instruction has at least one door to the exterior and rooms for assembly purposes have at least one- half of the required means of egress doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A fire-resistance rating is not required for corridors contained within dwelling or sleeping unit in an occupancy in Group R.
3. A fire-resistance rating is not required for corridors in open parking garages.
4. A fire-resistance rating is not required for corridors in an occupancy in Group B which is a space requiring only a single means of egress complying with Section 1015.1
5, A fire-resistance rating is not required for corridors in an occupancy in Group B which is a space requiring only a single means of egress complying with Section 1015.1

~~**TABLE 1017.1**~~
~~**CORRIDOR FIRE-RESISTANCE RATING**~~

~~**OCCUPANCY**~~	~~**OCCUPANT LOAD SERVED BY CORRIDOR**~~	~~**REQUIRED FIRE RESISTANCE RATING (hours)**~~	
		~~**Without Sprinkler System**~~	~~**With Sprinkler System**[c]~~
~~H1, H-2, H3~~	~~All~~	~~Not Permitted~~	~~1~~
~~H4, H-5~~	~~Greater than 30~~	~~Not Permitted~~	~~1~~
~~A, B, E, F, M, S, U~~	~~Greater than 30~~	~~1~~	~~0~~
~~R~~	~~Greater than 10~~	~~Not Permitted~~	~~0.5~~
~~I-2[a], I-4~~	~~All~~	~~Not Permitted~~	~~0~~
~~I-1, I-3~~	~~All~~	~~Not Permitted~~	~~1[b]~~

~~a. For requirements for occupancies in Group I-2, see Section 408.7.~~
~~b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.~~
~~c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.~~

Commenter's Reason - Connolly: Today, life-safety concerns must include more than protection from fire and smoke; it must also include safeguarding our employees and children from increasing incidents of armed aggression and physical violence. Increasing the fire-protection rating of corridor walls and partitions in A and E occupancies from no fire-rating at all, in fully sprinklered occupancies, to 1-hour fire-rated construction in these same areas can result in an increase in physical security due, in part, to the requirements for fire-rated walls and partitions to extend from the floor to the deck or roof structure above the ceiling.

Openings in non-fire rated corridor walls and partitions may or may not have door leaves (e.g., passageways, cased-open archways, etc.), creating large, unobstructed and continuous paths of travel which are difficult to maintain physical security within.

Physical security is increased additionally at the door openings in fire-rated walls and partitions due to requirements for door openings (e.g., door leaves, frames and hardware) to be of more substantial construction than door openings in non-fire rated walls and partitions. Fire-rated door openings are required to be self-closing or automatic-closing, thereby ensuring the door leaves will be closed and latched in cases of fire or smoke emergencies. In certain occupancies, fire-rated openings are likely to be secured with locking hardware (e.g., mortise or bored locksets and fire exit hardware, etc.). For example, classroom doors in educational occupancies in 1-hour fire-rated corridor walls will be of sufficient construction to resist fire and smoke for a minimum of 20 minutes and most likely will have locking hardware, which will allow teachers to secure the openings from inside the classroom in situations where stepping into the corridor may place the teachers or students in physical jeopardy.

Tragic incidents of physical violence in public buildings have left us with indelible memories of these occurrences. We believe requiring corridor walls and partitions to be 1-hour fire-rated construction will also provide the occupants with an increased level of physical security.

This modification is submitted in support of the original proposal E128-06/07. This modification converts Table 1017.1 to text form and retains all existing exemptions.

Commenter's Reason - McHugh: Fire and Smoke Resistance Rated Compartmentation, whether corridor, occupancy separation, or compartmentation systems with openings protected by rolling and swinging fire doors, fire dampers, fire glass and firestopping are a vital part of fire and life safety in buildings.

Research from Emporis.com shows that in the top 20 major cities, there are over 11,000 buildings. The top 5 cities that comprise 70% of these 11,000 buildings; Chicago, New York, San Francisco, Honolulu, and Los Angeles, all have common related facts. The common thread between these buildings is that in Chicago and New York, a large inventory of buildings were constructed using effective compartmentation as their first line of defense. Sprinkler systems have been added to these structures adding valuable fire protection to the building. In Honolulu, Los Angeles, and San Francisco, the building inventory uses both effective fire and smoke resistance rated compartmentation systems and sprinkler, detection and alarm systems for protection.

Based on this information, we believe that the conclusion of safer buildings is a result of buildings that have effective compartmentation, sprinkler, alarm and detection systems, fire drills and occupant education all working together to produce statistics showing safer buildings.

Properly designed, installed, inspected and maintained effective compartmentation is effective. Fire spread is limited to the room of origin using effective compartmentation. Additionally, effective compartmentation when operating in failure mode has some degree of protection for occupants in the building…albeit compromised. Nonetheless, there is some protection against fire spread restricting the speed of travel of fire, and oxygen loads needed for combustion.

Most importantly, it has been stated that compartmentation systems add significant costs to building construction. While we are aware that including compartmentation systems may add cost, it is an incremental cost. Instead of stopping walls at ceiling tile, extending walls to the fire resistance rated floor ceiling system above means movement of material and placement by a crew already mobilized and in place. Firestopping, fire doors, fire dampers all add cost to the building. However, HVAC Systems, rolling and swinging door systems are already being installed. Adding fire resistance adds cost, but the labor is already mobilized and working, thereby making this an incremental cost vs. a completely new system of both labor, material and transportation of both to the project site.

Plus, when placement of mechanical, electrical and plumbing systems is organized and managed efficiently by the construction team, reworking can be minimized and installation done right the first time. Extending walls up to a fire resistance rated floor/ceiling compartmentation system can be done with some additional labor and material costs. Since labor has already mobilized for the project, costs increase in an incremental way, marginal at best.

Fire and Smoke Resistance Rated Compartmentation, whether corridor, occupancy separation, or compartmentation systems with openings protected by rolling and swinging fire doors, fire dampers, fire glass and firestopping are a vital part of fire and life safety in buildings.

Public Comment 3:

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

Replace proposal with the following:

1017.1 Construction. Corridors shall have a fire-resistance rating of not less than 1 hour. ~~be fire-resistance-rated in accordance with Table 1017.1~~. The corridor walls required to be fire-resistance rated shall comply with Section 708 for fire partitions.

Exceptions:

1. A fire-resistance rating is not required for corridors in occupancies in Groups A, B, E, F, H-4, H-5, M, S, and U with an occupant load of 30 or less.
2. A fire-resistance rating is not required for corridors in an occupancy in Group R with an occupant load of 10 or less.
3 ~~1~~. A fire-resistance rating is not required for corridors in an occupancy in Group E where each room that is used for instruction has at least one door directly to the exterior and rooms used for assembly purposes have at least one-half of the required means of egress doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
4 ~~2~~. A fire-resistance rating is not required for corridors contained within a dwelling or sleeping unit in an occupancy in Group R.
5 ~~3~~. A fire-resistance rating is not required for corridors in open parking garages.
6 ~~4~~. A fire-resistance rating is not required for corridors in an occupancy in Group B which is a space requiring only a single means of egress complying with Section 1015.1.

~~**TABLE 1017.1**~~
~~**CORRIDOR FIRE-RESISTANCE RATING**~~

~~OCCUPANCY~~	~~OCCUPANT LOAD SERVED BY CORRIDOR~~	~~REQUIRED FIRE RESISTANCE RATING (hours)~~	
		~~Without Sprinkler System~~	~~With Sprinkler System[c]~~
~~H1, H-2, H3~~	~~All~~	~~Not Permitted~~	~~1~~
~~H4, H-5~~	~~Greater than 30~~	~~Not Permitted~~	~~1~~
~~A, B, E, F, M, S, U~~	~~Greater than 30~~	~~1~~	~~0~~
~~R~~	~~Greater than 10~~	~~Not Permitted~~	~~0.5~~
~~I-2[a], I-4~~	~~All~~	~~Not Permitted~~	~~0~~
~~I-1, I-3~~	~~All~~	~~Not Permitted~~	~~1[b]~~

~~a. For requirements for occupancies in Group I-2, see Section 408.7.~~
~~b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.7.~~
~~c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.~~

Commenter's Reason: The Alliance for Fire and Smoke Containment and Control (AFSCC) is submitting this Public Comment to request approval as modified for this code change proposal. This will require the ICC voting membership to overturn the Committee's recommendation for disapproval so that a motion for approval as modified in accordance with this Public Comment can then be voted on. The purpose of the modification is to simplify Section 1017.1 Construction and the associated Table 1017.1 which specifies the required fire-resistance rating for corridors in all occupancies. The modification is essentially editorial and makes no technical changes to the original code change proposal which reinstated the 1-hour fire-resistance ratings for corridors in sprinklered occupancies where the current code allows the rating of the corridor to be traded-off to no fire-resistance rating in a sprinklered building. If all corridors exceeding certain thresholds or in certain occupancies are required to have a 1-hour fire-resistance rating, whether the building is sprinklered or not, there is no need to have a complex table to indicate that requirement. That is what this code change proposal accomplishes with the modifications proposed.

We believe the proponent has developed a strong case for reinstating the 1-hour requirement for corridors in sprinklered occupancies where they are currently allowed to be traded-off. Corridors basically serve a life safety function. The main function is to provide a relatively safe means of egress to reach an exit and eventually evacuate the building with the other function being to provide the responding fire department with a relatively safe means to attack a fire within the building. Trading this 1-hour protection off for an automatic sprinkler system is not prudent in our opinion for this application. If sprinklers were 100% effective and basically infallible, then we could be persuaded to agree that sprinkler trade-offs are appropriate for eliminating the corridor protection. But, of course, sprinklers are not infallible. In fact, the most recent study conducted by William E. Koffel, P.E. of Koffel Associates in January 2006 indicates that 1 in every 9 fires in a sprinklered building where the fire was judged large enough to have activated a sprinkler, the sprinkler system did not perform satisfactorily. That is an 89% successful performance rate which has also been independently verified by Dr. John Hall of NFPA who compiles the statistics on automatic sprinkler performance in this country.

Therefore, one must determine if that degree of reliable performance is sufficient to justify such a trade-off. This should also be taken into consideration within the context of other sprinkler trade-offs that would also be allowed that would directly impact the occupants using these corridors. For example, travel distances are allowed to be increased as much as 100 feet, the length of the common path of egress travel in many of these occupancies can be increased from 75 feet to 100 feet, or even to 125 feet for Group R-2 occupancies, and in Groups B and F occupancies the dead end travel within a corridor can be increased from 20 feet to 50 feet. The interior finish requirements for corridors are also relaxed in buildings protected with an automatic sprinkler system. Generally, where corridors are

required to have a Class A or B interior finish (flame spread index less than or equal to 25 or 75 respectively), the classification is allowed to be reduced to a Class C (flame spread index less than or equal to 200). And the required width of the corridor provided to satisfy occupant load can be reduced by 25% in a sprinklered building. This compounding of automatic sprinkler system trade-offs greatly concerns us and deserves further consideration by the ICC voting membership in relationship to the documented performance of automatic sprinkler systems. Because we do not believe the reliability of automatic sprinkler system performance is sufficient to justify the 1-hour sprinkler trade-off for corridors in these occupancies, we encourage that the ICC voting membership to approve this code change proposal as modified by this modified by this public comment.

Final Action: AS AM AMPC ____ D

E132-06/07
1017.5 (IFC [B] 1017.5)

Proposed Change as Submitted:

Proponent: Gregory J. Cahanin, Cahanin Fire & Code Consulting, representing Building Performance and Research Institute

Revise as follows:

1**017.5 Exit access corridor continuity.** ~~Fire-resistance-rated~~ Exit access corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms. Exit access corridors are not permitted to lead through enclosed elevator lobbies.

Exception: Foyers, lobbies or reception rooms constructed as required for exit access corridors shall not be construed as intervening rooms.

Reason: For Means of Egress Sections 1014 through 1017 are addressing exit access with Section 1015 labeled Exist Access Doorways and Section 1016 labeled Exit Access Travel distance while Section 1017 is labeled Corridors.

The implication of existing language is that Section 1017 applies to all corridors when it is specific to corridors for exit access. The addition of "exit access" within this section prevents the application access provisions for convenience corridors.

Section 1017.5, Continuity now only applies to corridors that are fire-resistance rated corridors when many exit access corridors are not required to be fire-resistance-rated, but should be continuous. The deletion of 'fire-resistance-rated' and addition of language to properly address exit access corridors is logical. The new sentence reestablishes for all exit access corridors an exception contained in the 2000 edition of the IBC involving the ability to have egress paths travel through elevator lobbies.

Section 1017.5 continuity requirements for egress corridors have incorrectly limited continuity to fire-resistance-rated corridors when all exit egress corridors should have continuity as proposed in this change. Table 1017.1 reduces the fire resistance rating for several occupant type corridors with the addition of automatic sprinklers.

In the 2000 edition of the IBC an exception allowed fully sprinklered Group B occupancies with to have corridors lead though an enclosed elevator lobby provided all areas of the building have access to at least one required exit without passing through the elevator lobby. A proposed change in the 2002 Code Development Cycle (E-54) deleting Exception 2 addressing egress through an elevator lobby in Group B occupancies was approved. The reason for the deletion was, "The exception deleted serves no purpose and will only add to confusion in design and enforcement. A building, in use Group B, equipped with an automatic sprinkler system would not be required to have a fire-resistance-rated corridor. See IBC Table 1004.3.2.1."

The reestablishment of qualifiers for egress through an elevator lobby is a recognition that lobbies provide a necessary vertical separation component on each floor for elevator hoistways which are common to the interior of elevator lobbies.

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

Committee Action: **Disapproved**

Committee Reason: There was no justification for the increase for the fire resistance to all corridors. There was no indication of what the hazard would be for going through the elevator lobby. This proposal would conflict with Section 707.14 that allows options to not provide separated lobbies.

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 and Safety Consulting, representing Building Performance Research Institute, requests Approval as Modified by this public comment.

Modify proposal as follows:

1017.5 Exit ~~access~~ corridor continuity. Exit ~~access~~ corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms. Exit ~~access~~ corridors are not permitted to lead through enclosed elevator lobbies.

Exception: Foyers, lobbies or reception rooms constructed as required for exit ~~access~~ corridors shall not be constructed as intervening rooms.

Commenter's Reason: In the 2002 Code Development Cycle (E-54) deleted Exception 2 addressing egress through an elevator lobby in Group B occupancies with the justification stating "The exception deleted serves no purpose and will only add to confusion in design and enforcement. A building in use Group B equipped with an automatic sprinkler system would not be required to have a fie-resistance-rated corridor. See IBC Table (now numbered) 1017.1." Table 1017.1 is important in defining which corridors must be rated, while 1017.5 establishes continuity. This change will clarify that exit corridors, whether fire rated or not must provide a continuous path to the exit door.

Consistent with this clarification is the addition of the new statement that exit corridors are not permitted to lead through enclosed elevator lobbies. Elevator lobby construction from a fire and smoke standpoint becomes an extension of the elevator's vertical shaft and thereby prevents smoke spread onto a floor via an elevator shaft.

Final Action: AS AM AMPC ____ D

E133-06/07

1017.5, 1017.5.1 (New) [IFC [B] 1017.5, [B] 1017.5.1 (New)]

Proposed Change as Submitted:

Proponent: Bill Ziegert, Smoke Guard, division of RectorSeal

Revise as follows:

1017.5 Corridor continuity. Fire-resistance rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms or enclosed elevator lobbies.

Exception: Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms

1017.5.1 Nonrated corridors. Nonrated corridors shall not be interrupted by elevator lobbies.

Exception: In Group B buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, corridors are permitted to lead through enclosed elevator lobbies provided all areas of the building have access to at least one required exit without passing through the elevator lobby.

Reason: The purpose of this code change is clarify what is already the intent of the code and adds back language that was present in the 2000 IBC, but removed in the 2003 IBC. The current reference to lobbies in the Exception is confusing as to whether it just refers to office / residential lobbies or includes elevator lobbies. When people are in the exit access system leading to the exit stairs they should not be required to pass through an area of lesser safety to reach the safety of the exit stair system. In the case of both fire rated corridors and non rated corridors, the enclosed elevator lobby is subject to smoke from fires on other floors. Allowing people to pass through the enclosed lobby on their way to the exit stairs exposes them to this hazard.

In the 2000 IBC the reference to allowing passing through an enclosed elevator lobby in fully sprinklered office buildings was not required because elevator lobbies were not required in these types of buildings since they were not required to use fire rated corridors. That was the reason for the removal of this language in the 2003 IBC. In the 2006 IBC however, elevator lobby protection was no longer tied to the presence of fire rated corridors and this protection will be required in all High Rise buildings regardless of occupancy and whether or not the corridor is rated.

This change clarifies what is already the intent of the code as evidenced in prior code commentaries.

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

Analysis: There are other proposals to the elevator lobby provisions being heard by the Fire Safety Committee.

Committee Action: **Disapproved**

Committee Reason: There was no indication of a hazard associated with the elevator lobby. The building code already allows the elevator lobby to be used as an area of refuge. The proposal would prohibit stairways egressing off the lobby.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Bill Ziegert, Smoke Guard, Inc., requests Approval as Submitted.

Commenter's Reason: The purpose of the (enclosed) elevator lobby as required in 707.14.1 is to form a separation that prohibits smoke from entering the elevator shaft, or once it is in the shaft from passing back out the hoistway door and contaminating other floors remote from the fire. It has no other purpose! The enclosed elevator lobby is an extension of the elevator shaft and it is recognized that it is a higher hazard area than the exit access corridors. That is why there are requirements for the walls and doors to resist the passage of smoke.

If occupants are allowed or even forced to pass through the elevator lobby any time they are headed to the exit (stairs) they are going from an area of protection afforded by the corridor through an area of lower protection (part of the elevator shaft). Passing through the elevator lobby repeatedly in an emergency situation will allow any smoke in the corridor to enter the elevator lobby, then the shaft, and then eventually other floors. This is exactly contrary to the intent of 707.14.1 which is to provide a smoke membrane between the corridor and the elevator shaft and keep smoke out of the shaft and other floors remote from the fire.

Committee comments that the elevator lobby is not a hazardous area are contrary to the intent to have the lobby in the first place. Since the elevator lobby may also be serving as an area of refuge for an accessible elevator where disabled occupants may be waiting for extended periods, keeping separation between the corridors on each floor from the hoistway shaft is even more important. To allow smoke from one floor to enter an elevator shaft contaminating other floors because the egress path forces fleeing occupants to pass through the enclosed lobby / area of refuge places the disabled occupants of the entire building at risk. Finally the committee statement that this would prohibit stairs from being accessed from an elevator lobby is another reason to approve this change. Smoke present in the lobby and / or the elevator shaft because of continued egress through the lobby should not be allowed to also contaminate the exit stair system.

Final Action: AS AM AMPC ____ D

E137-06/07
1020.1 (IFC [B] 1020.1)

Proposed Change as Submitted:

Proponent: William M. Connolly, State of New Jersey, Department of Community Affairs, Division of Codes and Standards, representing International Code Council Ad Hoc Committee on Terrorism Resistant Buildings

Revise as follows:

1020.1 Enclosures required. Interior exit stairways and interior exit ramps shall be enclosed with fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. An exit enclosure shall not be used for any purpose other than means of egress. Exit stair enclosures shall be continuous from the highest story served by the enclosure to the level of exit discharge and shall not include horizontal transfer corridors other than at the level of exit discharge in accordance with Section 1024.

Exceptions:

1. In all occupancies, other than GroupHand I occupancies, a stairway is not required to be enclosed when the stairway serves an occupant load of less than 10 and the stairway complies with either Item 1.1 or 1.2. In all cases, the maximum number of connecting open stories shall not exceed two.
   1.1. The stairway is open to not more than one story above the story at the level of exit discharge; or
   1.2. The stairway is open to not more than one story below the story at the level of exit discharge.
2. Exits in buildings of Group A-5 where all portions of the means of egress are essentially open to the outside need not be enclosed.
3. Stairways serving and contained within a single residential dwelling unit or sleeping unit in Group R-1, R-2 or R-3 occupancies are not required to be enclosed.
4. Stairways that are not a required means of egress element are not required to be enclosed where such stairways comply with Section 707.2.

5. Stairways in open parking structures that serve only the parking structure are not required to be enclosed.
6. Stairways in Group I-3 occupancies, as provided for in Section 408.3.6, are not required to be enclosed.
7. Means of egress stairways as required by Section 410.5.3 are not required to be enclosed.
8. In other than Group H and I occupancies, a maximum of 50 percent of egress stairways serving one adjacent floor are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Any two such interconnected floors shall not be open to other floors. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.
9. In other than Group H and I occupancies, interior egress stairways serving only the first and second stories of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Such interconnected stories shall not be open to other stories. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.

Reason: This code change proposal is one of fourteen proposals being submitted by the International Code Council Ad Hoc Committee on Terrorism Resistant Buildings.

The purpose of this proposal is to eliminate the use of horizontal transfer corridors on upper floors thereby requiring an exit stair shaft to descend directly to the level of approved exit discharge.

The National Institute of Standards and Technology (NIST) World Trade Center (WTC) Report pointed out that horizontal transfers from one shaft to another caused occupant confusion and thereby slowed egress time. The WTC Report also recommended that Codes be revised to address the need for full building evacuation in the shortest possible time.

This proposal amends Section 1020.1 of the Code to require that exit stair enclosures be continuous from the top to the level of exit discharge. This will promote prompt evacuations. Some would argue that occupants can be trained to accept the counterintuitive horizontal transfers. Given the impracticality of full drills in high rise buildings, this training will be paper or lecture-based. At any given time, the building will have occupants who have not been trained. The proponents believe it is better to eliminate the unnatural rather than trying to train building occupants, who will be highly stressed, to expect and accept it.

Some will argue that this provision will put constraints on design. Of course it will. All safety requirements put constraints on design. It may take a little extra effort on the part of designers, but good buildings can incorporate this type of feature if designers put safety first.

Bibliography:

National Institute of Standards and Technology. Final Report of the National Construction Safety Team on the Collapses of the World Trade Center Towers. United States Government Printing Office: Washington, D.C. September 2005.

Cost Impact: The code change proposal will not increase the cost of construction. It can be met with careful design alone.

Committee Action: **Disapproved**

Committee Reason: This proposal, by eliminating the option of horizontal transfers in the exit enclosure, places severe limitations on building design. Horizontal movement may be necessary for adequate dispersion of exits in buildings with setbacks or to move around equipment floors. The proposed text uses the term 'corridor' instead of 'exit passageway'. The NIST report did mention delays at transfer floors, but most evacuation drills had not include actual travel down the stairways. This concern could have been partially addressed by fire drills/training.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Edmund C. Domian, West Valley City, Utah, requests Approval as Submitted.

Commenter's Reason: It is important that exit stair enclosures be designed as the most direct route to the building exterior from any point in a building, regardless of the floor plan, the occupant load, or the number of stories between the occupant and the level of exit discharge. Expecting occupants to traverse between stair enclosures down corridors along a complicated exit path in an emergency just adds to the panic and confusion and costs valuable travel time. The proponent's reason was on target. This change would not prohibit any occupant from entering any floor from the stairway for business as usual. It just prohibits ambiguous detours created by some architectural vision or cost cutting plan.

Public Comment 2:

William M. Connolly, State of New Jersey, Department of Community Affairs, Division of Codes and Standards, representing International Code Council Ad Hoc Committee on Terrorism Resistant Buildings, requests Approval as Modified by this public comment.

Staff Note: The proposal includes movement of the proposed requirement from Section 1020 *Vertical Exit Enclosures* to Section 1021 *Exit Passageways*.

Modify proposal as follows:

1020.1 Enclosures required. Interior exit stairways and interior exit ramps shall be enclosed with fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. An exit enclosure shall not be used for any purpose other than means of egress. ~~Exit stair enclosures shall be continuous from the highest story served by the enclosure to the level of exit discharge and shall not include horizontal transfer corridors other than at the level of exit discharge in accordance with Section 1024.~~

Exceptions:

1. In all occupancies, other than Group Hand I occupancies, a stairway is not required to be enclosed when the stairway serves an occupant load of less than 10 and the stairway complies with either Item 1.1 or 1.2. In all cases, the maximum number of connecting open stories shall not exceed two.
   1.1. The stairway is open to not more than one story above the story at the level of exit discharge; or
   1.2. The stairway is open to not more than one story below the story at the level of exit discharge.
2. Exits in buildings of Group A-5 where all portions of the means of egress are essentially open to the outside need not be enclosed.
3. Stairways serving and contained within a single residential dwelling unit or sleeping unit in Group R-1, R-2 or R-3 occupancies are not required to be enclosed.
4. Stairways that are not a required means of egress element are not required to be enclosed where such stairways comply with Section 707.2.
5. Stairways in open parking structures that serve only the parking structure are not required to be enclosed.
6. Stairways in Group I-3 occupancies, as provided for in Section 408.3.6, are not required to be enclosed.
7. Means of egress stairways as required by Section 410.5.3 are not required to be enclosed.
8. In other than Group H and I occupancies, a maximum of 50 percent of egress stairways serving one adjacent floor are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Any two such interconnected floors shall not be open to other floors. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.
9. In other than Group H and I occupancies, interior egress stairways serving only the first and second stories of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Such interconnected stories shall not be open to other stories. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.

Add new sections as follows:

1021.3 Length. In buildings with an occupied floor located more than 75 feet (22860 mm) above the lowest level of fire department vehicle access, exit passageways used to connect vertical exit enclosures on floors, other than the level of exit discharge, shall be no more than 50 feet (15 240 mm) in length.

1021.3.1 Signage. Exit passageways, that change direction at other than the level of exit discharge, shall be provided with directional signage. The words "Exit continues this way" and directional arrows shall comply with Section 1011.5.1.

(Renumber current 1021.3 through 1021.5)

Commenter's Reason: The main reason for the committee's disapproval of the change was "eliminating the option of horizontal transfers in the exit enclosure places severe limitations of building design". The committee did acknowledge that the NIST report on the World Trade Center did mention delays at transfer floors. This public comment eliminates the restriction on horizontal transfers; however, it does places a restriction on the horizontal length of travel that an occupant is required to traverse. The 50 feet limit on the exit passageway that being used for horizontal transfer is consistent with the code's limit on dead end corridors. The code currently requires horizontal transfer in exit enclosures to comply with Section 1021; this public comment merely places a restriction on the transfer length as well as provides for directional signage within the exit passageway.

Final Action: AS AM AMPC ____ D

E139-06/07

1011.3, 1020.1.6 (IFC [B] 1011.3, [B] 1020.1.6), 1110.3

Proposed Change as Submitted:

Proponent: Bill Conner, Conner Associates LLC, representing himself

Revise as follows:

1011.3 Tactile exit signs. A tactile sign stating EXIT and complying with ICC A117.1 Section 703.3 shall be provided adjacent to each door to an ~~egress~~ exit stairway, an exit ramp, an exit passageway and the exit discharge.

1020.1.6 ~~Stairway~~ Floor number signs. A sign shall be provided at each floor landing in interior exit enclosures connecting more than three stories designating the floor level, the terminus of the top and bottom of the ~~stair~~ exit enclosure and the identification of the stair or ramp. The signage shall also state the story of, and the direction to the exit discharge and the availability of roof access from the ~~stairway~~ enclosure for the fire department. The sign shall be located 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. Floor level identification signs in tactile characters complying with ICC A117.1, Section 703.3 shall be located at each floor level landing adjacent to the door leading from the enclosure into the corridor to identify the floor level.

1110.3 Other signs. Signage indicating special accessibility provisions shall be provided as shown:

1. Each assembly area required to comply with Section 1108.2.6 shall provide a sign notifying patrons of the availability of assistive listening systems.

   Exception: Where ticket offices or windows are provided, signs are not required at each assembly area provided that signs are displayed at each ticket office or window informing patrons of the availability of assistive listening systems.

2. At each door to an egress stairway, exit passageway and exit discharge, signage shall be provided in accordance with Section 1011.3.
3. At areas of refuge, signage shall be provided in accordance with Sections 1007.6.3 through 1007.6.5.
4. At areas for assisted rescue, signage shall be provided in accordance with Section 1007.8.3.
5. Within exit enclosures signage shall be provided in accordance with Section 1020.1.6.

Reason: Tactile signs should also be required at exit ramps, similar to exit stairways. Exit signage is not required at all stairways, just exit stairways. The change will also coordinate with ADAAG 216.4.1 and ICC A117.1 504.9.

Persons with visual impairments need to know what floor level they are on both for general use and emergency situations. This is coordination with ICC A117.1 504.9. The proposal to Section 1110.3 is coordination only.

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

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved because the reason was given as coordination with ICC A117.1 and floor number signs are not required by ICC A117.1. The IBC should not reference specific sections of the ICC A117.1 standard.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Bill Conner, representing himself, requests Approval as Modified by this public comment.

Modify proposal as follows:

1011.3 Tactile exit signs. A tactile sign stating EXIT and complying with ICC A117.1 ~~Section 703.3~~ shall be provided adjacent to each door to an exit stairway, an exit ramp, an exit passageway and the exit discharge.

1020.1.6 Floor number signs. A sign shall be provided at each floor landing in interior exit enclosures connecting more than three stories designating the floor level, the terminus of the top and bottom of the exit enclosure and the identification of the stair or ramp. The signage shall also state the story of, and the direction to the exit discharge and the availability of roof access from the enclosure for the fire department. The sign shall be located 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions. Floor level identification signs in tactile characters complying with ICC A117.1, ~~Section 703.3~~ shall be located at each floor level landing adjacent to the door leading from the enclosure into the corridor to identify the floor level.

1110.3 Other signs. Signage indicating special accessibility provisions shall be provided as shown:

1. Each assembly area required to comply with Section 1108.2.6 shall provide a sign notifying patrons of the availability of assistive listening systems.

   Exception: Where ticket offices or windows are provided, signs are not required at each assembly area provided that signs are displayed at each ticket office or window informing patrons of the availability of assistive listening systems.

2. At each door to an egress stairway, exit passageway and exit discharge, signage shall be provided in accordance with Section 1011.3.
3. At areas of refuge, signage shall be provided in accordance with Sections 1007.6.3 through 1007.6.5.
4. At areas for assisted rescue, signage shall be provided in accordance with Section 1007.8.3.
5 . Within exit enclosures signage shall be provided in accordance with Section 1020.1.6.

Commenter's Reason: The reference to Section 703.3 in ICC A117.1 was intended to provide specific direction to appropriate requirements for the signage rather than a general reference, but based on the committee comments, it has been removed from the proposal.

The committee was incorrect in it's assumption that floor level identification is not found in A117.1. See ICC A117.1-2003, Section 504.9. It is proposed to add this important safety information into the building code. This is not just an accessibility issue.

Final Action: AS AM AMPC ____ D

E145-06/07
1022.1, 1022.4 (IFC [B] 1022.1, [B] 1022.4)

Proposed Change as Submitted:

Proponent: Gregory R. Keith, Professional heuristic Development, representing The Boeing Company

Revise as follows:

1022.1 Horizontal exits. Horizontal exits serving as an exit in a means of egress system shall comply with the requirements of this section. A horizontal exit shall not serve as the only exit from a portion of a building, and where two or more exits are required, not more than one-half of the total number of exits or total exit width shall be horizontal exits.

Exceptions:

1. Horizontal exits are permitted to comprise two-thirds of the required exits from any building or floor area for occupancies in Group I-2.
2. Horizontal exits are permitted to comprise 100 percent of the exits required for occupancies in Group I-3. At least 6 square feet (0.6 m_2) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

~~Every fire compartment for which credit is allowed in connection with a horizontal exit shall not be required to have a stairway or door leading directly outside, provided the adjoining fire compartments have stairways or doors leading directly outside and are so arranged that egress shall not require the occupants to return through the compartment from which egress originates.~~

~~The area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant capacity imposed by persons entering it through horizontal exits from another area. At least one of its exits shall lead directly to the exterior or to an exit enclosure.~~

1022.4 Capacity of refuge area. The refuge area of a horizontal exit shall be a space occupied by the same tenant or a public area and each such refuge area shall be adequate to accommodate the original occupant load of the refuge area plus the occupant load anticipated from the adjoining compartment. The anticipated occupant load from the adjoining compartment shall be based on the capacity of the horizontal exit doors entering the refuge area. The capacity of the refuge area shall be computed based on a net floor area allowance of 3 square feet (0.2787 m^2) for each occupant to be accommodated therein.

Exception: The net floor area allowable per occupant shall be as follows for the indicated occupancies:

1. Six square feet (0.6 m_2) per occupant for occupancies in Group I-3.
2. Fifteen square feet (1.4 m_2) per occupant for ambulatory occupancies in Group I-2.
3. Thirty square feet (2.8 m_2) per occupant for nonambulatory occupancies in Group I-2.

<u>The refuge area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant load imposed by persons entering it through horizontal exits from other areas. At least one refuge area exit shall lead directly to the exterior or to an exit enclosure.</u>

Reason: The second paragraph of Section 1022.1 is confusing and out of context. It references a fire compartment credit concept that is not recognized anywhere in Chapter 10. Additionally, it represents an exception to an apparent requirement. If it is felt that this provision has any technical pertinence, it should be placed in context at the proper section and formatted as an exception to a fundamental requirement.

The third paragraph of Section 1022.1 has been relocated to Section 1022.4. That provision deals with the design of the means of egress from the refuge area and is more appropriately located in the latter section. Approval of this proposal will clarify the intent of the code and assist users in the proper determination of horizontal exit technical requirements.

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

Committee Action: **Disapproved**

Committee Reason: The concept of not returning through the compartment is very important for horizontal exits. Without this language the argument could be made that someone would have to move back through the same compartment to exit the building and that would be detrimental to safety.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Gregory R. Keith, Professional heuristic Development, representing The Boeing Company, requests Approval as Modified by this public comment.

Modify proposal as follows:

1022.1 Horizontal exits. Horizontal exits serving as an exit in a means of egress system shall comply with the requirements of this section. A horizontal exit shall not serve as the only exit from a portion of a building, and where two or more exits are required, not more than one-half of the total number of exits or total exit width shall be horizontal exits.

Exceptions:

1. Horizontal exits are permitted to comprise two-thirds of the required exits from any building or floor area for occupancies in Group I-2.
2. Horizontal exits are permitted to comprise 100 percent of the exits required for occupancies in Group I-3. At least 6 square feet (0.6 m2) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

1022.4 Capacity of refuge area. The refuge area of a horizontal exit shall be a space occupied by the same tenant or a public area and each such refuge area shall be adequate to accommodate the original occupant load of the refuge area plus the occupant load anticipated from the adjoining compartment. The anticipated occupant load from the adjoining compartment shall be based on the capacity of the horizontal exit doors entering the refuge area. The capacity of the refuge area shall be computed based on a net floor area allowance of 3 square feet (0.2787 m2) for each occupant to be accommodated therein.

Exception: The net floor area allowable per occupant shall be as follows for the indicated occupancies:

1. Six square feet (0.6 m2) per occupant for occupancies in Group I-3.
2. Fifteen square feet (1.4 m2) per occupant for ambulatory occupancies in Group I-2.
3. Thirty square feet (2.8 m2) per occupant for nonambulatory occupancies in Group I-2.

The adjoining compartment shall not be required to have a stairway or door leading directly outside, provided the refuge area into which a horizontal exit leads has stairways or doors leading directly outside and are so arranged that egress shall not require the occupants to return through the compartment from which egress originates.

The refuge area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant load imposed by persons entering it through horizontal exits from other areas. At least one refuge area exit shall lead directly to the exterior or to an exit enclosure.

Commenter's Reason: The second paragraph of Section 1022.1 is confusing and out of context. It references a fire compartment credit concept that is not recognized anywhere in Chapter 10. Additionally, it represents an exception to an apparent requirement. Nevertheless, as indicated in the published reason for disapproval, it was felt that the concept of not returning to the compartment of origin should be retained. Accordingly, the current provision has been rewritten using contemporary language and placed in context in Section 1022.4.

The third paragraph of Section 1022.1 has been relocated to Section 1022.4. That provision deals with the design of the means of egress from the refuge area and is more appropriately located in the latter section. Approval of this proposal will clarify the intent of the code and assist users in the proper determination of horizontal exit technical requirements.

Final Action: AS AM AMPC ____ D

E146-06/07
1022.4 (New) [IFC [B] 1022.4 (New)

Proposed Change as Submitted:

Proponent: Dennis Richardson, City of San Jose, CA Building Division, representing Tri-Chapter Code Committee (Peninsula, East Bay and Monterey Chapters of ICC)

Add new text as follows:

1022.4 Ducts and air transfer openings, Ducts and air transfer openings through fire walls or fire barriers, forming a horizontal exit, shall be designed and protected in accordance with Section 716 in order to afford safety from both fire and smoke in the refuge area. All ducts and air transfer openings shall be protected by listed combination fire/smoke dampers.

Reason: The purpose of the code change is to provide code language that implements the intent of Section 1002.1, definition of Horizontal Exit. Horizontal exits are intended to afford safety from both fire **and smoke.**

No code provisions specifically require duct and air transfer openings in horizontal exit walls to be designed and protected in order to afford safety from both fire and smoke in the refuge area.

Section 1022.2 Separation, refers to sections 705 and 706 which refer to 716.5.1 and 716.5.2 There are no provisions in 716.5.1 Fire walls, and 716.5.2 Fire barriers, requiring ducts and air transfer openings in horizontal exit walls to be protected by anything other than fire dampers.

Cost Impact: The code change proposal will not increase the cost of construction as the definition of Horizontal Exit is very clear. It is currently the intent of the code to provide protection from smoke in addition to fire for horizontal exits. It appears the lack of such implementing code language is an oversight in the current code.

Analysis: If approved, would this section conflict with duct and transfer opening requirements for fire walls Section 705.10 or fire barrier in Section 706.10?

Committee Action: **Disapproved**

Committee Reason: The proponent has identified a missing item in the code that needs be addressed, however, the reference to Section 716 jumps over limitations in fire walls and fire barriers. This language would better located in Chapter 7.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Dennis Richardson, City of San Jose, Building Division, representing Tri-Chapter Code Committee (Peninsula, East Bay, and Monterey Bay Chapters of ICC) requests Approval as Modified by this public comment.

Replace proposal with the following:

716.5.1.1 Horizontal Exits. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a fire wall or fire barrier that serves as a horizontal exit.

716.5.2.1 Horizontal Exits. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a fire wall or fire barrier that serves as a horizontal exit.

1022.2 Separation. The separation between buildings or refuge areas connected by a horizontal exit shall be provided by a fire wall complying with Section 705 or a fire barrier complying with Section 706 and having a fire-resistance rating of not less than 2 hours. Opening protectives in horizontal exit walls shall also comply with Section 715. Duct and air transfer openings in a fire wall or fire barrier that serves as a horizontal exit shall also comply with Section 716. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire-resistance rating of not less than 2 hours with no unprotected openings.

Commenter's Reason: The committee acknowledged smoke dampers are missing for fire walls and fire barriers serving as horizontal exit walls in the present code language. This public comment addresses the concern raised by the committee that the original language in E146 creating a new section to address this issue jumped over references to Sections 705 and 706 found in Section 1022.2 of the present code language. By adding the reference to Section 716 in a similar manner as the reference to Section 715 found in

Section1022.2, the public comment language preserves the integrity of the references to Sections 705 and 706 found in Section 1022.2. Sections 716.5.1.1 and 716.5.2.1 are added in Chapter 7 to clarify smoke dampers are required in addition to fire dampers for fire walls and fire barriers serving as a horizontal exit wall but not in other fire walls and fire barriers.

Final Action: AS AM AMPC ____ D

E147-06/07
1023.2 (IFC [B] 1023.2)

Proposed Change as Submitted:

Proponent: Tim Pate, City and County of Broomfield, Colorado Building Department, representing Colorado Chapter ICC

Revise as follows:

1023.2 Use in a means of egress. Exterior exit ~~ramps and~~ stairways shall not be used as an element of a required means of egress for Group I-2 occupancies. For occupancies in other than Group I-2, exterior exit ramps and stairways shall be permitted as an element of a required means of egress for buildings not exceeding six stories above grade plane or having occupied floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

Reason: This proposal will delete the requirement that does not allow an exterior exit ramp to be used as a part of the means of egress (exit discharge) for an I-2 occupancy. The code would allow an exit ramp to be used within the building to access the exit so it does not make sense to not allow the same type of exit ramp to be used at the exterior discharge. The ramp would be constructed with the proper maximum slope, handrails, edge protection, etc. so that it would be just as safe on the exterior as it is on interior. The code also regulates outdoor conditions as per Section 1010.7.2 which would make sure water would not accumulate on the walking surface.

The change that put this in – E60/02, was adding 'ramps and' to multiple sections that addressed 'stairways'. The reason states "This proposal is to recognize that exterior exit elements can also include ramps. The same protection criteria applied to stairways is also applicable to ramps when used as part of the exit system." It appears this change, especially when a high percentage of the people could be in wheelchairs or even in beds, inadvertently resulted in a prohibition for exterior ramps for Group I-2 occupancies.

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

Committee Action: **Disapproved**

Committee Reason: While the committee agreed that ramps should be permitted as part of the means of egress from Group I-2 facilities at some level, with the current deletion, the second sentence of the section would then allow a Group I-2 to have an exit ramp of any height.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Tim Pate, City and County of Broomfield, Colorado, representing himself, requests Approval as Modified by this public comment.

Replace proposal as follows:

1023.2 Use in a means of egress. Exterior exit ramps <u>with a rise of more than one story</u> and stairways shall not be used as an element of a required means of egress for Group I-2 occupancies. For occupancies in other than Group I-2, exterior exit ramps and stairways shall be permitted as an element of a required means of egress for buildings not exceeding six stories above grade plane or having occupied floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

Commenter's Reason: The intent of the original code change was to allow exterior ramps to serve as part of required means of egress for Group I-2 occupancies since ramps could also be used as part of the exit access within the same occupancy. The committee agreed that an exterior ramp should be allowed. They had concern that the original wording would then allow an exterior ramp of any height. This modification would restrict the height of the exterior ramp to one story or less. This modified change would then allow I-2 occupancies to be built on sites where the required exits are not always at grade.

Final Action: AS AM AMPC ____ D

E149-06/07

1018.1, 1024.1, 1015.2, 1020.1.7.1 (IFC [B] 1018.1, [B] 1024.1, [B] 1015.2, [B] 1020.1.7.1)

Proposed Change as Submitted:

Proponent: Gregory R. Keith, Professional heuristic Development, representing The Boeing Company

Revise as follows:

1018.1 General. Exits shall comply with Sections 1018 through 1023 and the applicable requirements of Sections 1003 through 1013. An exit shall not be used for any purpose that interferes with its function as a means of egress. Exits shall discharge directly to the exterior of the building. Required exits shall be located in a manner that makes their availability obvious. Exits shall be unobstructed at all times. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge.

Exceptions:

1. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through areas on the level of discharge provided all of the following are met:
   - 1.1. Such exit enclosures egress to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of termination of the exit enclosure.
   - 1.2. The entire area of the level of discharge is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.
   - 1.3. The egress path from the exit enclosure on the level of discharge is protected throughout by an approved automatic sprinkler system. All portions of the level of discharge with access to the egress path shall either be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of exits.
2. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule provided all of the following are met:
   - 2.1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.
   - 2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).
   - 2.3. The area is separated from the remainder of the level of exit discharge by construction providing protection at least the equivalent of approved wired glass in steel frames.
   - 2.4. The area is used only for means of egress and exits directly to the outside.
3. Stairways in open parking garages complying with Section 1020.1, Exception 5, are permitted to egress through the open parking garage at the level of exit discharge

1024.1 General. ~~Exits shall discharge directly to the exterior of the building.~~ The exit discharge arrangement shall comply with this section and the applicable requirements of Sections 1003 through 1012. The exit discharge shall be at grade or shall provide direct access to grade. The exit discharge shall not reenter a building.

~~**Exceptions:**~~

~~1. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through areas on the level of discharge provided all of the following are met:~~
   - ~~1.1. Such exit enclosures egress to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of termination of the exit enclosure.~~
   - ~~1.2. The entire area of the level of discharge is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.~~
   - ~~1.3. The egress path from the exit enclosure on the level of discharge is protected throughout by an approved automatic sprinkler system. All portions of the level of discharge with access to the egress path shall either be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of exits.~~

~~2. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule provided all of the following are met:~~

~~2.1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.~~

~~2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).~~

~~2.3. The area is separated from the remainder of the level of exit discharge by construction providing protection at least the equivalent of approved wired glass in steel frames.~~

~~2.4. The area is used only for means of egress and exits directly to the outside.~~

~~3. Stairways in open parking garages complying with Section 1020.1, Exception 5, are permitted to egress through the open parking garage at the level of exit discharge~~

1015.2 Exit or exit access doorway arrangement. ~~Required exits shall be located in a manner that makes their availability obvious. Exits shall be unobstructed at all times.~~ Exit and exit access doorways shall be arranged in accordance with Sections 1015.2.1 and 1015.2.2.

1020.1.7.1 Enclosure exit. A smokeproof enclosure or pressurized stairway shall exit into a public way or into an exit passageway, yard or open space having direct access to a public way. The exit passageway shall be without other openings and shall be separated from the remainder of the building by 2-hour fire-resistance-rated construction.

Exceptions:

1. Openings in the exit passageway serving a smokeproof enclosure are permitted where the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure, and openings are protected as required for access from other floors.
2. Openings in the exit passageway serving a pressurized stairway are permitted where the exit passageway is protected and pressurized in the same manner as the pressurized stairway.
3. A smokeproof enclosure or pressurized stairway shall be permitted to egress through areas on the level of discharge or vestibules as permitted by Section ~~1024~~ 1018.1.

Reason: The purpose of this proposal is to centralize and clarify design requirements for the exit portion of the means of egress system. Obviously, Section 1018 is titled "EXITS" and is intended to serve as the primary location for key provisions peculiar to the exit portion of the means of egress system. Indeed, the first sentence of Section 1018.1 states that, "Exits shall comply with Sections 1018 through 1023.

Currently, several exit provisions are mislocated. For example, Section 1024.1 (exit discharge), contains the requirement for exits to discharge to the exterior of the building. The proper relocation of this provision to Section 1018.1 also necessitates the relocation of the current Section 1024.1 exceptions to the same section. These exceptions are attendant to the requirements for exits to discharge directly to the exterior of the building and should follow that particular technical requirements. Additionally, Section 1015.2 (exit access) contains exit specific design requirements. These exit recognition and unobstruction requirements should be properly located in Section 1018.1 where they will likely not be overlooked by code users.

Approval of this proposal will clarify current code provisions and assist in the proper determination of exit design requirements.

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

Committee Action: **Disapproved**

Committee Reason: The proposal to move the exceptions from exit discharge to exits does not improve the code. The current location is clear.

Assembly Action: **None**

Individual Consideration Agenda

This item is on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Gregory R. Keith, Professional heuristic Development, representing The Boeing Company, requests Approval as Submitted.

Commenter's Reason: The purpose of this proposal is to centralize and clarify design requirements for the exit portion of the means of egress system. Obviously, Section 1018 is titled "EXITS" and is intended to serve as the primary location for key provisions peculiar to the exit portion of the means of egress system. Indeed, the first sentence of Section 1018.1 states that, "Exits shall comply with Sections 1018 through 1023.

Currently, several exit provisions are mislocated. For example, Section 1015.2 (exit access) contains exit specific design requirements. These exit recognition and unobstruction requirements should be properly located in Section 1018.1 where code users will likely not overlook them. Additionally, Section 1024.1 (exit discharge) contains the requirement for exits to discharge to the exterior of the building. The proper relocation of this provision also necessitates the relocation of the current Section 1024.1 exceptions to Section 1018.1.

In Orlando, the Means of Egress Code Development Committee disapproved this proposal citing that it does not improve the code and that they preferred the vestibule exceptions in their current location. I believe that those code practitioners familiar with NFPA 101 means of egress provisions prefer the current location for these various provisions as they correlate with that code. Unfortunately, users without that sort of technical background are not well served by the illogical placement of these technical provisions. It should be noted that no language or technical requirement has been changed. Provisions have only been properly relocated in context with the applicable portion of the IBC three part means of egress system.

IBC technical provisions should support that code without regard to historical provisions of other codes and their unique systems. Approval of this proposal will clarify current code provisions and assist in the proper determination of exit design requirements.

Public Comment 2:

Gregory R. Keith, Professional heuristic Development, representing The Boeing Company, requests Approval as Modified by this public comment.

Modify proposal as follows:

1018.1 General. Exits shall comply with Sections 1018 through 1023 and the applicable requirements of Sections 1003 through 1013. An exit shall not be used for any purpose that interferes with its function as a means of egress. Exits shall discharge directly to the exterior of the building. Required exits shall be located in a manner that makes their availability obvious. Exits shall be unobstructed at all times. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge.

~~**Exceptions:**~~

~~1. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through areas on the level of discharge provided all of the following are met:~~
   ~~1.1. Such exit enclosures egress to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of termination of the exit enclosure.~~
   ~~1.2. The entire area of the level of discharge is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.~~
   ~~1.3. The egress path from the exit enclosure on the level of discharge is protected throughout by an approved automatic sprinkler system. All portions of the level of discharge with access to the egress path shall either be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of exits.~~
~~2. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule provided all of the following are met:~~
   ~~2.1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.~~
   ~~2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).~~
   ~~2.3. The area is separated from the remainder of the level of exit discharge by construction providing protection at least the equivalent of approved wired glass in steel frames.~~
   ~~2.4. The area is used only for means of egress and exits directly to the outside.~~
~~3. Stairways in open parking garages complying with Section 1020.1, Exception 5, are permitted to egress through the open parking garage at the level of exit discharge.~~

1024.1 General. ~~Exits shall discharge directly to the exterior of the building.~~ The exit discharge arrangement shall comply with this section and the applicable requirements of Sections 1003 through 1012. The exit discharge shall be at grade or shall provide direct access to grade. Exits shall discharge directly to the exterior of the building. The exit discharge shall not reenter a building.

Exceptions:

1. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through areas on the level of discharge provided all of the following are met:
   1.1. Such exit enclosures egress to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of termination of the exit enclosure.
   1.2. The entire area of the level of discharge is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.
   1.3. The egress path from the exit enclosure on the level of discharge is protected throughout by an approved automatic sprinkler system. All portions of the level of discharge with access to the egress path shall either be protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of exits.
2. A maximum of 50 percent of the number and capacity of the exit enclosures is permitted to egress through a vestibule provided all of the following are met:
   2.1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating for the exit enclosure.
   2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).
   2.3. The area is separated from the remainder of the level of exit discharge by construction providing protection at least the equivalent of approved wired glass in steel frames.
   2.4. The area is used only for means of egress and exits directly to the outside.
3. Stairways in open parking garages complying with Section 1020.1, Exception 5, are permitted to egress through the open parking garage at the level of exit discharge.

1015.2 Exit or exit access doorway arrangement. Exit and exit access doorways shall be arranged in accordance with Sections 1015.2.1 and 1015.2.2.

1020.1.7.1 Enclosure exit. A smokeproof enclosure or pressurized stairway shall exit into a public way or into an exit passageway, yard or open space having direct access to a public way. The exit passageway shall be without other openings and shall be separated from the remainder of the building by 2-hour fire-resistance-rated construction.

Exceptions:

1. Openings in the exit passageway serving a smokeproof enclosure are permitted where the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure, and openings are protected as required for access from other floors.
2. Openings in the exit passageway serving a pressurized stairway are permitted where the exit passageway is protected and pressurized in the same manner as the pressurized stairway.
3. A smokeproof enclosure or pressurized stairway shall be permitted to egress through areas on the level of discharge or vestibules as permitted by Section 1024 ~~1018.1~~.

Commenter's Reason: The purpose of this proposal is to centralize and clarify design requirements for the exit portion of the means of egress system. Obviously, Section 1018 is titled "EXITS" and is intended to serve as the primary location for key provisions peculiar to the exit portion of the means of egress system. Indeed, the first sentence of Section 1018.1 states that, "Exits shall comply with Sections 1018 through 1023.

Currently, several exit provisions are mislocated. For example, Section 1024.1 (exit discharge) contains the requirement for exits to discharge to the exterior of the building. The proper relocation of this provision also necessitates the relocation of the current Section 1024.1 exceptions to Section 1018.1. Additionally, Section 1015.2 (exit access) contains exit specific design requirements. These exit recognition and unobstruction requirements should be properly located in Section 1018.1 where code users will likely not overlook them.

In Orlando, the Means of Egress Code Development Committee disapproved this proposal citing that it does not improve the code and that they preferred the vestibule exceptions in their current location. I believe that those code practitioners trained in the NFPA 101 means of egress provisions prefer the current location for these various provisions as they correlate with that code. Unfortunately, users without that sort of technical background are not well served by the illogical placement of these technical provisions. Nevertheless, this public comment retains the vestibule exceptions in their current location as preferred by the committee, while relocating only those misplaced exit access provisions currently found in Section 1015.2.

Approval of this proposal will clarify current code provisions and assist in the proper determination of exit design requirements.

Final Action: AS AM AMPC ____ D

E153-06/07

1025.4 (IFC [B] 1025.4)

Proposed Change as Submitted:

Proponent: Gene Boecker, Code Consultants, Inc.

Revise as follows:

1025.4 Foyers and lobbies. In Group A-1 occupancies, where persons are admitted to the building at times when seats are not available ~~and~~ are allowed to wait in a lobby or similar space, provided such ~~use of~~ lobby or similar space shall not encroach upon the required clear width of the means of egress. ~~Such waiting areas shall be separated from the required means of egress by substantial permanent partitions or by fixed rigid railings not less than 42 inches (1067 mm) high.~~ Such foyer, if not directly connected to a public street by all the main entrances or exits, shall have a straight and unobstructed corridor or path of travel to every such main entrance or exit.

Reason: To eliminate an unnecessary code requirement from the IBC.

This provision does not address egress but the use of the space. It does not belong in the code. The only time that the separation is needed is when there is no emergency in the theater. In practice, these railed separations are unnecessary. The means of egress from a lobby must take into consideration the queuing population, making this requirement redundant.

It is a misunderstanding, therefore, to consider persons in waiting areas as potential obstructions to egress. Whether queuing or seated, these persons are occupants, and must be accommodated by the means of egress. Unfortunately, this requirement is widely interpreted to require rails or partitions, even when (as the code requires) the waiting load is already accommodated by the means of egress.

In addition, these rails or partitions can themselves constitute obstructions to egress.

As an example, a theater has 1,000 seats, 50 employees and a queuing (waiting) load of 300. This results in a total occupant load of 1,350. Egress capacity from the entire occupancy must at least equal this occupant load. More importantly to this proposal, the egress capacity of the main exit from the lobby must accommodate ½ of this load (675). The queuing load is already included in this calculation, and the egress width required to serve the queuing population as well as the theater occupants leaving the seating areas would be required by the code to be accommodated by the main exit and other exits from the occupancy.

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

Committee Action: **Disapproved**

Committee Reason: The language should not be deleted. A separation is required for waiting areas in order to keep them from creeping into the path for means of egress.

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 Submitted.

Commenter's Reason: Several comments by the committee seem to indicate that the issue was not well understood. The issue raised y the committee does not validate the concern. Why is it necessary to keep the people in the waiting area from creeping into the path of egress? What is the threat or danger? There was no reason stated because there is none. All the occupants will need to egress in an emergency so the egress path will be "occupied" regardless.

The people in the waiting area and the people in the theater(s) are used to determine the total width of egress at the main entrance. It is not required to distribute the widths according to where they are located in the lobby. The entire set of doors is used for egress. If (for example) the doors are sized for 1500 people in the theater and 500 people in the waiting, the total width must be based upon 2000 occupants – regardless of where they are coming from. If a physical barrier is placed between the people waiting to egress (whether from the theaters or from the lobby) and the egress doors, people will be forced to either wait while their side egresses or climb over the barrier to reach the available egress doors. The entire main egress is designed for the 2000 occupants whether on one side or the other of the fixed barrier. If there were no barrier and people moved over to the path of egress from the theater, they would still be in queue waiting to leave. It takes the same amount of time to egress 2000 people whether some are "within the path of egress" or not. On the other hand, with the physical barrier in place, it is possible to cause some occupants to be delayed based on which side of the barrier they chose to egress. Given a choice, people typically pick the shortest line but if they are restricted in so doing by a fixed barrier, they cannot opt for the alternate route.

It makes no sense to restrict the occupants from access to egress elements. This provision has been in one of the legacy codes but not the others; nor in the Life Safety Code©. If there is evidence of a problem with the design that has no physical barriers then that should be presented as evidence of a need for the barriers. To date, no entity has presented such evidence. It is illogical to place a restriction on egress in this manner.

The provision appears to be solely based on circulation related concerns – allowing people to leave the theater while not interfering with those waiting for the next event. If that is the case, there are no provisions within the code to determine the width, nor does that fall into the realm of life safety. Hence, it has no place within the code – it is a convenience issue.

As noted above, the fixed barrier is actually less safe that allowing a free and open area from which to select an egress path. Without substantiating data showing that this is a viable concern – and with historical evidence showing that some legacy other codes (and other current codes) do not require the barrier this provision should be removed as a potential impedance to egress.

Final Action: AS AM AMPC ____ D

E155-06/07

1025.5, 1025.5.1, 1020.1 (IFC [B] 1025.5, [B] 1025.5.1, [B] 1020.1)

Proposed Change as Submitted:

Proponent: Tom Wandrie, ICC 300 Development Committee

Revise as follows:

1025.5 Interior balcony<u>,</u> ~~and~~ gallery <u>and press box</u> means of egress. For balconies<u>,</u> ~~or~~ galleries <u>or press boxes</u> having a seating capacity of 50 or more located in Group A occupancies, at least two means of egress shall be provided, with one from each side of every balcony<u>,</u> ~~or~~ gallery <u>or press boxes</u> and at least one leading directly to an exit.

1025.5.1 Enclosure of balcony openings. Interior stairways and other vertical openings shall be enclosed in an exit enclosure as provided in Section 1020.1, except that stairways are permitted to be open between the balcony<u>, gallery or press box</u> and the main assembly floor in occupancies such as theaters, places of religious worship<u>,</u> ~~and~~ auditoriums <u>and sports facilities</u>. At least one accessible means of egress is required from a balcony<u>,</u> ~~or~~ gallery <u>or press boxes</u> level containing accessible seating locations in accordance with Section 1007.3 or 1007.4.

1020.1 Enclosures required. Interior exit stairways and interior exit ramps shall be enclosed with fire barriers constructed in accordance with Section 706 or horizontal assemblies constructed in accordance with Section 711, or both. Exit enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the exit enclosure shall include any basements but not any mezzanines. An exit enclosure shall not be used for any purpose other than means of egress.

Exceptions:

1. In all occupancies, other than Group H and I occupancies, a stairway is not required to be enclosed when the stairway serves an occupant load of less than 10 and the stairway complies with either Item 1.1 or 1.2. In all cases, the maximum number of connecting open stories shall not exceed two.
   1.1. The stairway is open to not more than one story above the story at the level of exit discharge; or
   1.2. The stairway is open to not more than one story below the story at the level of exit discharge.
2. Exits in buildings of Group A-5 where all portions of the means of egress are essentially open to the outside need not be enclosed.
3. Stairways serving and contained within a single residential dwelling unit or sleeping unit in Group R-1, R-2 or R-3 occupancies are not required to be enclosed.
4. Stairways that are not a required means of egress element are not required to be enclosed where such stairways comply with Section 707.2.
5. Stairways in open parking structures that serve only the parking structure are not required to be enclosed.
6. Stairways in Group I-3 occupancies, as provided for in Section 408.3.6, are not required to be enclosed.
7. Means of egress stairways as required by Section 410.5.3 are not required to be enclosed.
8. Means of egress stairways from balconies, galleries an press boxes as provided for in Section 1025.5.1, are not required to be enclosed.

~~8.~~ 9. In other than Group H and I occupancies, a maximum of 50 percent of egress stairways serving one adjacent floor are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Any two such interconnected floors shall not be open to other floors. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.

~~9.~~ 10. In other than Group H and I occupancies, interior egress stairways serving only the first and second stories of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 are not required to be enclosed, provided at least two means of egress are provided from both floors served by the unenclosed stairways. Such interconnected stories shall not be open to other stories. Unenclosed exit stairways shall be remotely located as required in Section 1015.2.

Reason: The intent of this proposal is to clarify when press boxes can use a single means of egress. Open stairways are permitted between the press box and the main floor or ground similar to balconies. Changes to Section 1020.1 are for coordination only. If the committee decision is that press boxes do not need to be included, the exception for open exit stairways at balconies and galleries should still be referenced in Section 1020.1.

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

Committee Action: **Disapproved**

Committee Reason: While the committee agreed with the intent of the proposal, there can be a great diversity in what might be considered a press box. A definition for press boxes is needed in order to define where this special means of egress would be permitted. It should be clarified if the occupant load would be determined for each room in a press box or the whole level. Press boxes are addressed in IBC 903, 1025 and 1104.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Tom Wandrie, ICC 300 Development Committee, requests Approval as Submitted.

Commenter's Reason: The reason "Press Boxes" were included in our proposed revision was to be certain they would be regulated under the IBC and not the ICC 300 standard. A press box is simply a space which is very similar to a balcony or gallery (both of which are not defined in the IBC). The press box is typically partially or fully enclosed for sound proofing purposes. If fully enclosed, at least one side facing the playing area is glazed. Therefore a fire in the press box would be noticed, similar to a balcony, gallery, or mezzanine. IBC sections 903, 1025, and 1104 already identify press boxes as accessory use areas, and provide sprinkler thresholds and accessible route requirements. We believe it makes the most sense to include press boxes with balconies and galleries in the IBC sections identified in this change proposal. These changes would clearly identify that; a seating capacity of 50 or more requires at least two exits and when exit enclosures are required.

Final Action: AS AM AMPC ____ D

E156-06/07

1025.6.1, 1025.6.2, Table 1025.6.2, 1025.6.3, Table 1025.6.3 (New) [IFC [B] 1025.6.1, [B] 1025.6.2, [B] Table 1025.6.2, [B] 1025.6.3, [B] Table 1025.6.3 (New)]

Proposed Change as Submitted:

Proponent: Tom Wandrie, ICC 300 Development Committee

1. Revise as follows:

1025.6.1 Without smoke protection. The clear width of the means of egress shall provide sufficient capacity in accordance with all of the following, as applicable:

1. At least 0.3 inch (7.6 mm) of width for each occupant served shall be provided on stairs having riser heights 7 Inches (178 mm) or less and tread depths 11 inches (279 mm) or greater, measured horizontally between tread nosings.
2. At least 0.005 inch (0.127 mm) of additional stair width for each occupant shall be provided for each 0.10 inch (2.5mm)of riser height above 7 inches (178 mm).
3. Where egress requires stair descent, at least 0.075 inch (1.9 mm) of additional width for each occupant shall be provided on those portions of stair width having no handrail within a horizontal distance of 30 inches (762 mm).
4. Ramped means of egress, where slopes are steeper than one unit vertical in ~~12~~ 10 units horizontal ~~(8-percent slope)~~, shall have at least 0.22 inch (5.6 mm) of clear width for each occupant served. Level or ramped means of egress, where slopes are not steeper than one unit vertical in ~~12~~ 10 units horizontal ~~(8-percent slope)~~, shall have at least 0.20 inch (5.1 mm) of clear width for each occupant served.

1025.6.2 Indoor Smoke-protected seating. The clear width of the means of egress for indoor smoke-protected assembly seating shall not be less than the occupant load served by the egress element multiplied by the appropriate factor in Table 1025.6.2. The total number of seats specified shall be those within the space exposed to the same smoke-protected environment. Interpolation is permitted between the specific values shown. A life safety evaluation, complying with NFPA 101, shall be done for a facility utilizing the reduced width requirements of Table 1025.6.2 for smoke-protected assembly seating.

~~**Exception:** For an outdoor smoke-protected assembly with an occupant load not greater than 18,000, the clear width shall be determined using the factors in Section 1025.6.3.~~

TABLE 1025.6.2
WIDTH OF AISLES FOR INDOOR SMOKE-PROTECTED ASSEMBLY SEATING

TOTAL NUMBER OF SEATS IN THE INDOOR SMOKE-PROTECTED ASSEMBLY OCCUPANCY	INCHES OF CLEAR WIDTH PER SEAT SERVED			
	Stairs and aisle steps with handrails within 30 inches	Stairs and aisle steps without handrails within 30 inches	Passageways, doorways and ramps not steeper than in 1:10 slope	Ramps steeper than in 1:10 slope

(Portions of table not shown remain unchanged)

1025.6.3 ~~Width of means of egress for~~ outdoor smoke-protected seating ~~assembly~~. ~~The clear width in inches (mm) of aisles and other means of egress shall be not less than the total occupant load served by the egress element multiplied by 0.08 (2.0 mm) where egress is by aisles and stairs and multiplied by 0.06 (1.52 mm) where egress is by ramps, corridors, tunnels or vomitories.~~

~~**Exception:** The clear width in inches (mm) of aisles and other means of egress shall be permitted to comply with Section 1025.6.2 for the number of seats in the outdoor smoke-protected assembly where Section 1025.6.2 permits less width.~~ The clear width of the means of egress for outdoor smoke-protected assembly seating shall not be less than the occupant load served by the egress element multiplied by the appropriate factor in Table 1025.6.3. The total number of seats specified shall be those within the space exposed to the same smoke-protected environment. Interpolation is permitted between the specific values shown. A life safety evaluation, complying with NFPA 101, shall be done for a facility utilizing the reduced width requirements of Table 1025.6.3 for smoke-protected assembly seating.

2. Add new table as follows:

TABLE 1025.6.3
WIDTH OF AISLES AND MEANS OF EGRESS FOR OUTDOOR SMOKE-PROTECTED ASSEMBLY SEATING

TOTAL NUMBER OF SEATS IN THE OUTDOOR SMOKE-PROTECTED ASSEMBLY OCCUPANCY	INCHES OF CLEAR WIDTH PER SEAT SERVED			
	Stairs and aisle steps with handrails within 30 inches	Stairs and aisle steps without handrails within 30 inches	Passageways, doorways and ramps not steeper than 1:10 slope	Ramps steeper than 1:10 slope
Equal to of less than 15,000	0.080	0.100	0.060	0.066
20,000	0.076	0.095	0.056	0.062
Equal to or greater than 25,000	0.060	0.075	0.044	0.048

Reason: The intent of this proposal to Section 1025.6.3 is to coordinate with the ICC 300 for outdoor smoke-protected seating. The change for the ramp slope from 1:12 to 1:10 in Section 1025.6.1 and Table 1025.6.3 is to be consistent with Table 1025.6.2 and the proposals to the ICC 300. The change to the title and headings in Table 1025.6.2 is to clarify when each table should be utilized. The exception for Section 1025.6.2 was originally proposed by E65-00 to avoid a possible conflict with Section 1025.6.3.

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

Committee Action: **Disapproved**

Committee Reason: There was not any technical justification provided for the change. There is a difference between assembly seating covered in the IBC and bleacher seating covered by ICC 300.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Tom Wandrie, ICC 300 Development Committee, requests Approval as Submitted.

Commenter's Reason: The committee disapproved this change based on the lack of technical justification. If examined closely, most of this proposal is clarification and coordination between assembly seating, smoke-protected and non-smoke-protected and/or indoor and outdoor, which already exist in the IBC. While the ICC 300 has different requirements in some respects to other types of tiered seating, the width of the means of egress within the seating should be consistent between the two documents.

Final Action: AS AM AMPC ____ D

E159-06/07
1025.11.1 (IFC [B] 1025.11.1)

Proposed Change as Submitted:

Proponent: Gene Boecker, Code Consultants, Inc., representing National Association of Theater Owners (NATO)

Revise as follows:

1025.11.1 Treads. Tread depths shall be a minimum of 11 inches (279 mm) and shall have dimensional uniformity.

Exceptions:

1. The tolerance between adjacent treads shall not exceed 0.188 inch (4.8 mm).
2. Where a single riser is provided between seating tiers, the maximum tread depth shall not exceed 18 inches (457.2 mm).

Reason: Current code text results in provisions that can create a tripping hazard at each level where a tread can project past the width of a seat in a seating row. This change will limit the depth of treads to prevent the creation of a tripping hazard at the point where seating rows meet aisles.

Seats in assembly occupancies are generally 18 inches in depth, and are located on tiers 36 inches in depth. Where rows are designed with depths greater than 36 inches, seats retain the 18 inch depth, but legroom and walking room are increased. Providing treads with dimensional uniformity results in the tread projecting past the depth of the seat into the width of the aisle accessway. This creates a tripping hazard at the end of each seating row, since the tread will be deeper than the aisle accessway. This change will assure that aisle accessways are designed such that the aisle accessway depth is uniform to the point where travel upwards or downwards can begin.

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

Committee Action: **Disapproved**

Committee Reason: The exception would result in a potential tripping hazard with potential non-uniformity in treads. The proposal would also limit design options when the seating row spacing is more than 36 inches.

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:

1025.11.1 Treads. Tread depths shall be a minimum of 11 inches (279 mm) and shall have dimensional uniformity.

Exceptions:

1. The tolerance between adjacent treads shall not exceed 0.188 inch (4.8 mm).
2. Where a single riser is provided between adjacent seating tiers, the maximum tread depth ~~shall~~ is not required to exceed 18 inches (457 mm) provided that the tread depth is consistent for the entire length of the aisle.

Commenter's Reason: During committee hearings two issues were identified as important to the committee. The first issue is already a problem; the second has been addressed by the modification.

The concern addressed with the non-uniform treads is that it will potentially create a trip hazard. This is presumably due to the cadence that would be developed walking a set of steps. In a traditional set of stairs, this is largely true. However, while there are times when a person will walk the stairs upward prior to the event similar to a stair, after the event the conditions change. Unlike a typical stair where a person walks at a regular pace, after an event, occupants walk very slowly on a set of stairs. As people are trying to enter the aisles from the seating rows, travel is reduced to a slow pace. A person will in some cases shuffle feet and not take actual steps due to this slow down.

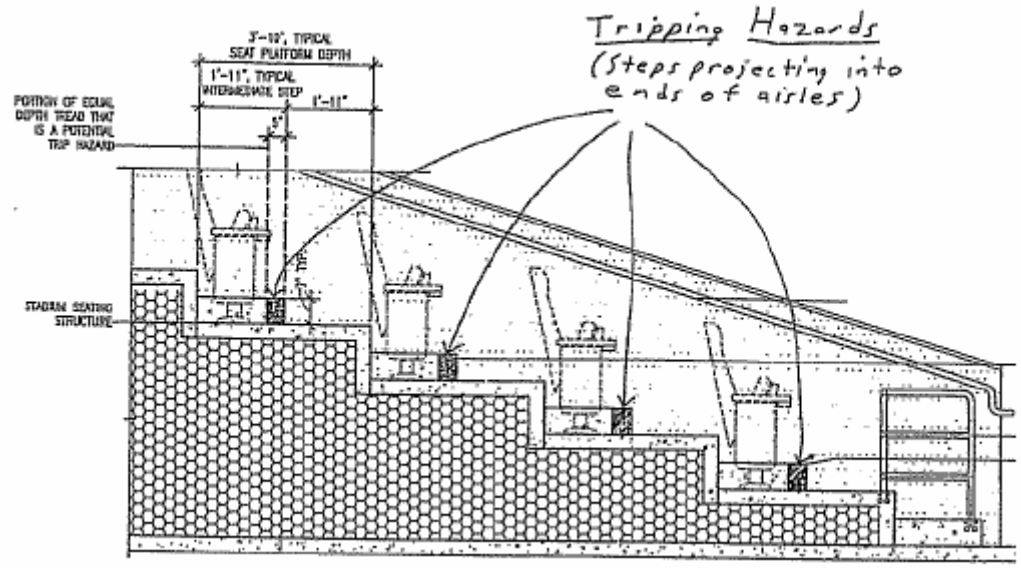
Another issue with cadence is that it is developed after a few steps.

If all the non-uniform steps are consistent, as is required in the modification, a cadence will be developed but not a traditional one. In walking steps with depths between approximately 13 inches and 18 inches a single step is taken. Between 18 inches and 24 inches two steps are taken. What happens in uniform tread aisles is that a person takes two small steps and then two large steps or will change cadence because it does not feel comfortable. In non-uniform treads, there is a single step on the short treads followed by two on the longer tread. Thus a cadence is developed which allows faster movement. The greater the number of steps, the greater the potential for tripping.

Additionally, there is a current trip hazard – at the end of each row. As a person is moving into the aisle from the row, that person must walk past the single tread. If this tread depth exceeds the depth of the seating, then it will project into the walking path. Consequently, the requirement in the code for uniform treads actually creates a trip hazard. Seating depths vary depending on the seating manufacturer. Typically, the depth is around 18 inches from the riser behind the seat. The illustration shows the problem. If the tread depth is uniform, it projects into the aisle accessway at the aisle juncture. The proposal would reduce that potential.

The second concern raised by the committee is addressed by rephrasing the text. If the seating tier is greater than 36 inches the single tread would still be allowed to be only 18 inches. For example; if the seating depth is 34 inches, the tread would be 17 inches – if the seating depth is 36 inches the tread would be 18 inches – and, if the seating depth is 48 inches, the tread depth would still be required to be only 18 inches. With the revised language, if the owner decided to install a 24 inch riser that would be allowed – but not required.

The potential tripping hazard exists. Anecdotal information from theater owners indicates that there are more trip and fall incidences from entering the aisle than for traveling the aisle. This proposal would allow those to be reduced.



Final Action: AS AM AMPC ____ D

E163-06/07
Chapter 35

Proposed Change as Submitted:

Proponent: Tom Wandrie, ICC 300 Development Committee

Revise standard as follows:

ICC

ICC 300 – ~~02~~ 06 Standard on Bleachers, Folding and Telescopic Seating and Grandstands

Reason: The work plan for the bleacher standard should result in a completed document before the September hearings.

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

Committee Action: **Disapproved**

Committee Reason: The proposal was disapproved because although the development of the 2006 edition is complete, the standard is not yet printed and generally available.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Tom Wandrie, ICC 300 Development Committee, requests Approval as Submitted.

Commenter's Reason: The committee disapproved this proposal because while the final draft for the 2007 edition off ICC 300 was available, the document was not available for sale. The ICC 300, 2007 edition will be published and available for sale before the Final Action Hearings in 2007.

Final Action: AS AM AMPC ____ D

E176-06/07
Table 1107.6.1.1

Proposed Change as Submitted:

Proponent: Joe Reich, New York State Commission on Quality of Care and Advocacy for Persons with Disabilities;Dominic Marinelli, United Spinal Association

Revise table as follows:

TABLE 1107.6.1.1
ACCESSIBLE DWELLING AND SLEEPING UNITS

TOTAL NUMBER OF UNITS PROVIDED	MINIMUM REQUIRED NUMBER OF ACCESSIBLE UNITS WITHOUT ROLL-IN SHOWERS	MINIMUM REQUIRED NUMBER OF ACCESSIBLE UNITS ASSOCIATED WITH ROLL-IN SHOWERS	TOTAL NUMBER OF REQUIRED ACCESSIBLE UNITS
1 to 25	1	0	1
26 to 50	2	0	2
51 to 75	3	1	4
76 to 100	4	1	5
101 to 150	5	2	7
151 to 200	6	2	8
201 to 300	7	3	10
301 to 400	8	4	12
401 to 500	9	4	13
501 to 1,000	2% of total	1% of total	3% of total
Over 1, 001	20, plus 1 for each 100, or fraction thereof, over 1000	10 plus 1 for each 100, or fraction thereof, over 1,000	30 plus 2 for each 100, or fraction thereof, over 1,000

Reason: This proposed modification will clarify and ensure, that the accessible units will offer the same bathing options, as found in the standard rooms.

This change also meets the intent of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 9.1.4 (1) which requires these facilities to offer persons with disabilities a range of options equivalent to those available to other persons served by the facility. Finally, the modified table is identical to the ADA Draft, "Table 224.2 Guest Rooms with Mobility Features". This draft, published July 23, 2004 awaits final approval from the Department of Justice.

The current IBC Table 1107.6.1.1 uses the term "MINIMUM" when referring to the number of rooms associated with roll-in showers. Minimums can always be surpassed, thus allowing roll-in showers to be incorporated in all the accessible units. Some design professionals and hotel chains have done just that, in the belief that roll-in showers were favored by the disabled population. Nothing could be further from the truth. CHOICE and options equivalent to those available without disabilities is the basic premise found in the ADA.

Roll-in showers were never intended to replace transfer showers or tubs in accessible rooms. Once again, this is made clear under 9.1.4 (1) of ADA Title III.

In order to provide persons with disabilities a range of options equivalent to those available to other persons served by the facility, …..it continues.

"Factors to be considered include room size, cost, amenities provided and the number of beds."

If the standard rooms have tubs, then the accessible rooms would also have tubs, with a small percentage of rooms incorporated roll-in showers. The same would hold true if all the standard rooms had transfer showers, the accessible rooms would have transfer showers, with a small percentage of rooms having roll-in showers.

Providing roll-in showers in all the accessible rooms is problematic for persons who do not weight-bear or have poor sitting balance, yet are independent. Roll-in showers, do not provide the same protection as a 36" x 36" transfer shower stall. Roll-in showers do not have grab bars positioned to prevent a person from falling forward, as found in the transfer shower stall. Tubs provide 360˚ protection once seated, and is preferred by many people with mobility impairments for both security when sitting and the therapeutic relief from a warm bath.

The proposed modification of IBC Table 1107.6.1.1 provides for both roll-in showers and bathing fixtures equivalent to those offered in standard rooms be incorporated in the accessible rooms. The proposed table meets the intent of ADAAG section 9.1.4 in providing equal amenities, and is identical to the table found in the ADA draft, currently being reviewed by the Department of Justice.

Bibliography:

28 CFR Part 36 Section 9.1.4
Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines July 23, 2004 Table 224.2 Guest Rooms with Mobility features

Cost Impact: The code change proposal will not increase the cost of construction. The bathing fixtures placed in the accessible room are the same fixtures found in the standard rooms.

Committee Action: Approved as Modified

Modify table heading as follows:

TABLE 1107.6.1.1
ACCESSIBLE DWELLING AND SLEEPING UNITS

TOTAL NUMBER OF UNITS PROVIDED	MINIMUM REQUIRED NUMBER OF ACCESSIBLE UNITS WITHOUT ROLL-IN SHOWERS	MINIMUM REQUIRED NUMBER OF ACCESSIBLE UNITS ~~ASSOCIATED~~ WITH ROLL-IN SHOWERS	TOTAL NUMBER OF REQUIRED ACCESSIBLE UNITS

(Portions of proposal not shown remain unchanged)

Committee Reason: Adding the column would clarify that some Accessible Units should be provided with bathtubs or transfer showers to allow consumers increased options. A concern would be if the text in Section 1107.6.1.1 should be revised to clarify the options. This proposal is consistent with the new ADA/ABA Accessibility Guidelines. The title of the third column should be revised for consistency with the other titles.

Assembly Action: None

Individual Consideration Agenda

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

Public Comment:

Brian Black, BDBlack Codes, Inc, representing himself, requests Disapproval.

Commenter's Reason: This proposal was offered to harmonize the access requirements of the IBC with the 2004 ADA Accessibility Guidelines. The problem is the ADAAG requirement is flawed; the IBC should not replicate its mistake.

1. Accessible roll-in showers are usable by more persons with disabilities than are bathtubs, and are of particular benefit to persons with quadriplegia and similar disabilities who are unable to transfer over the bathtub dam (side) to either sit on a seat or on the bathtub floor. Conversely, while some guests or residents may *prefer* bathtubs, few are incapable of bathing in a roll-in shower. By requiring accessible units in buildings with 50 or fewer units to *not* have roll-in showers, this code change forces the designer and owner to either provide a lower level of accessibility than that which would be provided in a unit with a roll-on shower or add units with roll-in showers above that required by the code. The latter is not likely to happen.

   It is important to note that this code change would apply not only to Group R-1 hotels and motels, but to Group R-2 occupancies like dormitories. If a Red Roof Inn is compelled to not provide a roll-in shower by this code change, the traveler with a disability is likely to find a larger Marriott or Holiday Inn that does provide this amenity. The student in a state university dormitory who needs a roll-in shower does not have that option, and universities that are building small university dorm buildings to get away from institutional feel of high-rise housing will design and construct low rise housing with 10 or 20 units per building with no roll-in showers in the accessible units.

   Adding insult to this 'harmonization injury', most public and private colleges and universities are regulated by Section 504 of the Rehabilitation Act of 1973, and all public residential schools are covered by Title II of the Americans with Disabilities Act. These federal laws require that "reasonable accommodations" be made for students with disabilities, which could include removing the bathtub and installing a roll-in shower in the dorm room of a quadriplegic student. Even where these federal laws do not apply, the Fair Housing Amendments Act of 1988 would require a college to permit a disabled student to modify his or her dorm room to accommodate the student's needs, including adding a roll-in shower in the bathroom. These federal mandates would be contradicted by the IBC and IEBC alteration requirements that preclude "reducing" access by removing a tub and installing an accessible shower.

2. Dwelling and sleeping units in many high-end resorts and hotels have two or three bathrooms. An accessible unit in these facilities can now provide an accessible bathtub in one bathroom and an accessible roll-in shower in the second bathroom, providing more options and better accessibility to the guests or residents. This code change would preclude this design option, as the roll-in shower would be prohibited. The code would require units "without roll-in showers".

3. Because the new 2004 ADAAG and this code proposal do not specifically require bathtubs in the accessible units that are prohibited from having roll-in showers, the proponents not only acknowledge that the installation of an accessible 36 inch by 36 inch transfer shower could comply with this code change, but fabricate "benefits" of this shower compartment that have never come to light. Small transfer showers are purportedly better than roll-in showers, because the latter *"…do not have grab bars positioned to prevent a person from falling forward…"*

   Ignoring the challenges of cramming into a 36 inch opening with a wheelchair to try to get close enough to a molded-in, L-shaped shower seat to affect a safe and successful transfer in a 36x36 shower compartment, the proponents imply that transfer showers are safer than roll-in showers without providing any documentation, and suggest that untold numbers of disabled persons are falling off shower seats in roll-in showers. I served as a member of the federal ADAAG Advisory Committee and as Chair of the A117 Plumbing Task Group and never heard of these "benefits" of small showers, or of the alleged dangers of roll-in shower compartments. Setting aside the fact that most quadriplegics cannot use transfer showers, the proponents' allegations that roll-in showers are inherently unsafe would be better addressed by the A117 Committee or by prohibitions against these "dangerous" showers in the *International Plumbing Code*.

This code change (and the new ADAAG) could be written to permit the option of either bathtubs or roll-in showers in accessible dwelling and sleeping units in buildings with 50 or fewer units. Prohibiting showers in smaller buildings that comply with the current Table 1107.6.1.1 is unwarranted. The code should not preclude providing better access to more persons with disabilities simply because some people *prefer* bathtubs over showers or because the 2004 ADAAG is flawed.

Final Action: AS AM AMPC ____ D

E178-06/07
1108.2

Proposed Change as Submitted:

Proponent: Robert B. Bush, Code Source P.C.

Revise as follows:

1108.2 Assembly area seating. Assembly areas with fixed seating shall comply with Sections 1108.2.1 through ~~1108.2.7~~ 1108.2.4. Lawn seating shall comply with Section 1108.2.5. Assistive listening systems shall comply with Section 1108.2.6. Performance areas shall comply with Section 1108.2.7. Dining areas shall comply with Section 1108.2.8. ~~In addition, lawn seating shall comply with Section 1108.2.5.~~

Reason: Section 1108.2 needs to be changed in order to coordinate with the ADA Accessibility Guidelines (ADAAG) for both the current 1991 & 2004 ADAAG (the currently published 2004 ADAAG is proposed to be adopted by the various federal agencies in the near future and now represents the "state-of-the art" requirements for accessibility). It has been the intent of the IBC code to be consistent with the ADA Accessibility Guidelines since the federal requirement is the "law of the land" in regards to accessibility. But, since the federal government does not have the enforceability as does the building codes in terms of plan reviews and code enforcement for building construction inspections, it is very desirable to make these requirements consistent with the federal ADA requirements.

Both the assistive listening and the barrier free access to performance areas are not triggered only by a fixed seating area, but is scoped by Sections 1108.2.6 and 1108.2.7 only regardless if it has fixed or portable seating. In other words, in terms of scoping the requirement, these sections "stand on its' own" without the fixed seating scoping requirement of Section 1108.2. As currently written, some jurisdictions have a legitimate claim that when only fixed seating is provided, both Sections 1108.2.6 and 1108.2.7 would apply since Section 1108.2 currently states that assembly areas with **fixed seating** shall comply with Sections 1108.2.1 through 1108.2.7. Both the assistive listening and the performance areas fall within the range of these section numbers for fixed seating. But, this is wrong and the IBC requirements conflict with the ADAAG requirements. A code change is needed to fix this.

For evidence of the ADAAG requirements that the assistive listening system and accessible route access to a performance area from the seating area are both not triggered by fixed seating only, see the 2004 ADAAG scoping Sections 219.2 and 206.2.6 respectively issued herewith.

Bibliography:
2004 ADAAG, Section 206.2.6 – Scoping Section
2004 ADAAG, Section 219.2– Scoping Section

Cost Impact: This is a cost increase from the current code to provide accessibility for assistive listening system and to a performance level from an area without fixed seating.

Committee Action: **Disapproved**

Committee Reason: The requirements are already addressed. The proposed language does not improve 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:

Robert B Bush, Code Source, P.C, requests Approval as Submitted.

Commenter's Reason: The committee action is wrong in stating that the requirements are already addressed and that the language proposed does not improve the code. It is the intent of the code to be consistent with the ADA law (i.e., the ADAAG standards) as explained in the ICC Commentary book for Chapter 11. If this changed is not approved, this code will deviate further from the ADAAG standard. Section 1108.2 as currently written for assembly spaces must have **fixed** seating before Sections 1108.2.6 and 1108.2.7 are triggered. Therefore as written, assembly spaces can have portable chairs only and such use would not require assistive listening systems and access to raised performance areas (i.e, stages/platforms) as required by Sections 1108.2.6 and 1108.2.7. Refer to 2004 ADAAG Sections 206.2.6 and 219.2 (included herewith) and notice that as required by ADAAG, it is not "fixed seating" which will trigger the assistive listening systems and access to performance areas. Sections 1108.2.6 and 1108.2.7 therefore, should standalone without the fixed seating requirement of Section 1108.2.

206.2.6 Performance Areas. Where a circulation path directly connects a performance area to an assembly seating area, an accessible route shall directly connect the assembly seating area with the performance area. An accessible route shall be provided from performance areas to ancillary areas or facilities used by performers unless exempted by 206.2.3 Exceptions 1 through 7.

219.2 Required Systems. In each assembly area where audible communication is integral to the use of the space, an assistive listening system shall be provided.

Exception: Other than in courtrooms, assistive listening systems shall not be required where audio amplification is not provided.

Final Action: AS AM AMPC ____ D

E179-06/07

1108.2.3, (New)

Proposed Change as Submitted:

Proponent: Bill Conner, Bill Conner Associates LLC, representing American Society of Theatre Consultants

Add new text as follows:

1108.2.3 Companion seats. At least one companion seat complying with ICC A117.1 shall be provided for each wheelchair space required by Section 1108.2.2.1 through 1108.2.2.3.

Reason: This was deleted from the 2003 IBC in the last cycle, based at least partially on the same requirement being included in ICC A117.1. Requiring a companion seat is in fact a scoping requirement, not a technical requirement. In keeping with the approach of including scoping in the IBC, similar to Table 1108.2.2.1 for number of wheelchair spaces and Section 1108.2.4 for number of designated aisle seats, the scoping requirement for one companion seats adjacent to each wheelchair space should be in the IBC. ICC A117.1 will still include the technical details for this seat.

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

Committee Action: **Disapproved**

Committee Reason: The code is coordinated with the current edition of ICC A117.1 already.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Ed Roether, HOK SVE, requests Approval as Submitted.

Commenter's Reason: This proposal should be approved as submitted; it cleans up any confusion about the number of companion seats required. Although requirements for companion seats are in the current edition of ICC A117.1, the standard identifies how wheelchair spaces and companion seats are to be provided in assembly seating, not how many of either. Therefore, without this change a potential dispute exists about how many companion chairs are required.

Final Action: AS AM AMPC ____ D

E189-06/07
1109.13.1

Proposed Change as Submitted:

Proponent: Tim Pate, City and County of Broomfield, Colorado Building Department, representing himself

Delete without substitution:

~~**1109.13.1 Operable windows.** Where operable windows are provided in rooms that are required to be accessible in accordance with Sections 1107.5.1.1, 1107.5.2.1, 1107.5.3.1, 1107.5.4, 1107.6.1.1, 1107.6.2.2.1, and 1107.7.6.4.1, at least one window in each room shall be accessible and each required operable window shall be accessible.~~

~~**Exception:** Accessible windows are not required in bathrooms and kitchens.~~

Reason: This section does not need to exist in the body of the IBC since there are specific technical requirements for when operable windows need to be accessible in ICC A117.1-2003, Sections 1002.13 and 1003.13.

I have also written up an alternative proposal to add in a reference to Section 1107.6.2.1 (i.e. Group R-2, Type A units) to this section. Deleting the section entirely would be the preferable option. This would be consistent with technical criteria for the dwelling units and sleeping units being located in ICC A1171. However, if the committee does not like this option approval of the other change would at least match the requirements in ICC A117.1.

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

Committee Action: **Disapproved**

Committee Reason: Deletion of this requirement would not be consistent with the language in current ADAAG. The interpretation provided in the Access Board's Regulatory Assessment is not clear for all areas. The proposed language in E190-06/07 is preferable.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Tim Pate, City and County of Broomfield, Colorado, representing himself requests Approval as Submitted.

Commenter's Reason: The requirements for accessible operable windows already exist in Accessible and Type A dwelling unit requirements in the ICC A117.1 Standards, therefore this language is currently redundant.

In addition, there is a proposal in the A117 Committee requesting deleting or amending the requirement for operable windows to meet accessibility requirements. This will be resolved for the upcoming 2008 edition of the ICC A117.1 Standards. The window manufacturers have submitted a letter to the A117.1 Committee that states that none of the windows currently on the market are able to meet the 5 pounds maximum pressure to open, therefore the Code is requiring something that the manufacturers can not comply with. This section should be taken out of the IBC entirely and that way the A117 Committee can deal with the specific changes related to windows and we will not have a later conflict.

Final Action: AS AM AMPC ____ D

E191-06/07
Appendix E104.4 (New)

Proposed Change as Submitted:

Proponent: Joseph L. Brown, Abescon, New Jersey, representing himself

Add new text as follows:

E104.4 Bed clearance. At least one side of one bed in Accessible dwelling units and sleeping units shall provide vertical clearance under the bed for the full length and width of the bed, excluding legs and supports. Clearance shall be 6 1/2 inches (163 mm) high minimum measured from the finish floor to the underside of the bed frame.

Reason: Under title III of the ADA, See Section 303 of 28 CFR Part 36 at all public accommodations, including hotels, must provide auxiliary aids and services unless the provision of such auxiliary aids and services would result in a fundamental alteration of the nature of the goods, services, facilities, privileges, advantages, or accommodations being offered or would result in an undue burden. I believe that hotels should provide open framed beds as an auxiliary aid.

Beds that are on a pedestal or box makes using a patient lift impossible and therefore unable to use the bed.

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

Committee Action: **Disapproved**

Committee Reason: The proposal is an attempt to regulate furniture and would be virtually impossible to enforce.

Assembly Action: **None**

Individual Consideration Agenda

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

Public Comment:

Joe L. Brown, Galloway, New Jersey, representing himself, requests Approval as Submitted.

Commenter's Reason: Beds that are on a pedestal or box makes using a patient lift impossible and therefore unable to use the bed. I am asking to have open frame beds in the handicapped designated rooms.

Under title III of the ADA, See Section 303 of 28 CFR Part 36. All public accommodations, including hotels, must provide auxiliary aids and services or accommodations being offered would result in an undue burden. I believe that hotels should provide open framed beds as an auxiliary aid and a box or pedestal is an undue burden.

New Jersey and Florida have laws addressing bed clearance. This proposal to regulate furniture would not be impossible to enforce.

http://www.newszap.com/articles/2006/01/06/dm/central_delaware/dsn05.txt

http://audacitymagazine.com/audacity.php?op=article&y=grfx&v=&i=33&a=427 http://www.wcduke.com/newsexp.html#lodging

For support letters and news articles, please contact me. Jbro711@comcast.net

Final Action: AS AM AMPC ____ D