IBC — Egress

2018 GROUP A PUBLIC COMMENT AGENDA

OCTOBER 24 - 31, 2018
GREATER RICHMOND CONVENTION CENTER
RICHMOND, VA
**Proposed Change as Submitted**

**Proponent:** Jake Pauls, Jake Pauls Consulting Services, representing Jake Pauls Consulting Services (bldguse@aol.com)

**2018 International Building Code**

**Revise as follows**

1003.4 Slip-resistant surface. Circulation paths of the means of egress shall have a slip-resistant surface and be securely attached.

   **Exception:** Walking surfaces of showers and bathtubs not required to be accessible are not required to be slip-resistant where grab bars or stanchions complying with Section 1003.8 are provided.

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 1012 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:**

   1. A single step with a maximum riser height of 7 inches (178 mm) is permitted 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 where the risers and treads comply with Section 1011.5, the minimum depth of the tread is 13 inches (330 mm) and not less than one handrail complying with Section 1014 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 1029.14 and the aisle is provided with a handrail complying with Section 1029.16.
   4. Bathtubs required to be accessible and bathtubs with grab bars or stanchions complying with Section 1003.8 are permitted to have step-over bathtub walls.
   5. Showers, not required to be accessible are permitted to have curbs 6 inches (152 mm) high maximum where grab bars or stanchions complying with Section 1003.8 are provided.

Throughout a story in a Group I-2 occupancy, any change in elevation in portions of the means of egress that serve nonambulatory persons shall be by means of a ramp or sloped walkway.

**Add new text as follows**

1003.8 Stanchions or Grab bars for Bathtubs, Bathtub-Shower Combinations and Showers.

1003.8.1 General. Bathtubs and bathtub-shower combinations not required to be accessible shall provide at least one stanchion complying with 1003.8.2 and one grab bar complying with Section 1003.8.3. Showers not required to be accessible shall provide at least one stanchion or grab bar complying with Section 1003.4. All stanchions and grab bars shall comply with Sections 1003.8.5 through 1003.8.7.

1003.8.2, Stanchion or Grab Bar. A vertical stanchion or grab bar complying with Sections 1003.8.2.1 through 1003.8.2.3 shall be provided.

1003.8.2.1 Approach. The stanchion or grab bar shall be located so that it is usable without any obstruction. An unobstructed clear floor space of 21 inches (535 mm) wide minimum and 21 inches (535 mm) deep minimum, measured from the tub wall shall be provided. The clear floor space shall be located outside the tub and be within 12 inches (305 mm) of the centerline of the stanchion or grab bar measured horizontally.

1003.8.2.2 Length. The stanchion or grab bar shall be 36 inches (914 mm) long minimum and shall extend to a height of 60 inches minimum above the finished floor or bathtub floor, as applicable.
**1003.8.2.3 Position.** The stanchion or grab bar shall be positioned in accordance with at least one of the following two options:

1. Stanchion or grab bar located inside the bathtub or combination bathtub-shower compartment. The space, measured horizontally from the centerline of the stanchion or grab bar shall be 12 inches (305 mm) maximum to the exterior wall of the bathtub and 6 inches (152 mm) minimum to a shower curtain rod.

2. Stanchion or grab bar located outside the bathtub or combination bathtub-shower compartment. The stanchion or grab bar shall be 6 inches (152 mm) maximum from the outer side of the bathtub wall, measured horizontally.

**1003.8.3 Grab Bar.** A 24-inch (610 mm) long minimum grab bar shall be provided on the non-entry (long) side of bathtubs and bathtub-shower combinations and shall be positioned in accordance with Sections 1003.8.3.1 or 1003.8.3.2.

**1003.8.3.1 Horizontal Position.** A grab bar shall be installed in a horizontal position and shall be centered, plus or minus two inches (51 mm), along the length of the bathtub. The grab bar shall be located 8 inches (205 mm) minimum and 10 inches (255 mm) maximum above the bathtub rim measured to the centerline of the grab bar.

**1003.8.3.2 Diagonal Position.** A grab bar shall be installed in a diagonal position with its higher end 25 inches (635 mm) high minimum and 27 inches (685 mm) high maximum above the bathtub rim. The higher end shall be located no more than 12 inches (305 mm) from the control wall measured horizontally. The lower end shall be 8 inches (203 mm) high minimum and 10 inches high (255 mm) maximum above the bathtub rim.

**1003.8.4 Showers.** A stanchion or grab bar shall be provided, located either interior to or outside of the shower compartment, within 3 inches (76 mm) of the adjacent face of the opening. The stanchion or grab bar shall be 24 inches (610 mm) long minimum with its lower end 39 inches (991 mm) maximum above the finished floor.

**1003.8.5 Other Details.** Grab bars and stanchions shall comply with Section 1003.8.5.

**1003.8.5.1 Cross Section.** Grab bars and stanchions shall be circular in cross section having an outside diameter of 1-1/4 inches (32 mm) minimum and 2 inches (51 mm) maximum.

**1003.8.5.2 Spacing.** The space between the stanchion or grab bar and adjacent surfaces, including controls or other fixtures, shall be 1-1/2 inches (38 mm) wide minimum.

**1003.8.5.3 Surface Hazards.** Stanchions, grab bars, and adjacent surfaces shall be free of sharp or abrasive elements. Edges shall be rounded with a minimum radius of 0.25 inch (6 mm).

**1003.8.6 Structural Characteristics.** Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, stanchion, fastener, mounting device, or supporting structure. Grab bars and stanchions shall not rotate within their fittings.

**1003.8.7 Design and Installation for Water.** Grab bars, stanchions, fasteners, mounting devices, and supporting structure shall be composed of materials and installed to withstand damaging effects of water, including corrosion and other deterioration through their service life.

**Reason:**

**Reason Statement (Justification) for Grab Bars**

**for Bathtubs, Bathtub-Shower Combinations and Showers (Proposal ID: 1066)**

**Complying with New Requirements in IBC Section 1003**

Proposed by Jake Pauls, BArch, CPE, HonDSc

**Introduction**

**Points of Control.** Grab bars, handrails and stanchions are important building components providing—in combination with our hands and our feet—what are called (in ergonomics) “points of control” to maintain balance and aid in ambulation and other movement activities that are crucial to utilizing means of egress for safety generally (in both normal and emergency conditions) and which pose dangers of injurious falls, the leading source of injuries in most countries, including the USA.
A brief digression to explain “stanchions.” You see them routinely on transportation vehicles such as subway trains and city buses. They are the vertical assemblies of graspable tubing that are fixed between ceilings, horizontal handrails just above head height, seats, floors, etc. usually located between seating and passageways or aisles. The term, stanchions is used in ADA requirements for transportation vehicles and for this context Wikipedia has the following description: “On board most buses and trams/subways, vertical supports to provide stability when passengers are standing. They are located throughout most city buses and are connected to seats, floor, roof, etc.” This term is used in contexts similar to those for the “poles” referred to in NFPA’s recent adoption of new requirements for grab bars or poles for new bathtubs, bathtub-shower combinations and showers.

Examples of Points of Control in Specific Contexts. The starred, central cell of Table 1. shows the equity, with points of control—shown in bold italics—achieved with now-proposed grab bars, handrails and stanchions being required, in Section 1003, in the same way that handrails are required for stairs in the rest of the IBC.

Table 1.
Minimum Number of Points of Control Provided with New (★) or Currently Imposed Rules or Practices

<table>
<thead>
<tr>
<th>Number of Points of Control Via Hands or Feet</th>
<th>≤1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard walker for older adult with altered gait.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational settings with risk of worker falls from heights. Also, stairs where users can use two handrails simultaneously, one on each side.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stairs where users have only a single handrail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grab bar(s) usable for bathtub/shower entry/exit.</strong></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bathtubs/showers with slip resistant underfoot surfaces when wet.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
</tr>
<tr>
<td>Bathtubs/showers without slip resistant underfoot surfaces when wet, the common condition currently.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
</tr>
</tbody>
</table>

The Problems To Be Solved With A New Requirement for Grab Bars and Stanchions. The central and most important point of this code change proposal is to respond to the relatively high risk of injurious falls when entering and exiting bathing/showering facilities, in all new settings where they occur. Such risks exceed those for stairs on an exposure-adjusted basis. That is, the time during which one is stepping into or out of a bathtub or shower is more risky than a similar stepping behavior on a stair. The former result in about 25 percent of the injuries as do falls on stairs. This is based on about 300,000 US hospital emergency room visits per year for bathtubs and showers versus about 1.2 million US hospital emergency room visits per year for stairs, using comparably serious injury data for 2010 (discussed by Lawrence, et al., 2015 in the journal Injury Prevention). The societal cost of these injuries, plus about two and a half times additional, medically treated injuries, was (for 2010) about 20 billion dollars for US bathtubs and showers and about 93 billion dollars for US stairs with the greatest risk for both being in homes, where bathing/showering is a near daily activity for most people in the US (Lawrence, et al, 2015). (See also the annex to this justification for details of injuries documented by the US Consumer Product Safety Commission, CPSC.)

Table 1 depicts the current inequity as well as the increased equity that will be achieved when bathtubs and showers are subject to the same principle about availability of points of control (usable by ones hands or feet) that are crucial to our stability in utilizing those portions of the means of egress that entail elevation differences, changes of slope, and changes in slip resistance. The current—at best—one point of control provided with typical bathtubs and showers (i.e., one foot in a stable placement on a slip-resistant surface) would be augmented by one point of control available reliably to one hand. This achieves equity of safety with stairs where we can count on one foot planted on a tread and one hand on a handrail. For some situations, involving bathtubs used for immersion bathing (with occupants seated or lying on the bottom of the tub) two points of control, utilizing grab bars, or stanchions—one for each hand—are needed for this equity and, more practically, to accomplish the relatively difficult stand-to-sit and sit-to-stand transfers within the tub.

Size of the Problem with Bathtubs and Showers Compared to Other Large Problems. Figure 1, a pie chart, shows the approximate scales of the nonfatal injury problem for three dangers to building occupants. In the US, the traditional danger of fire-related injuries is far smaller than that from bathing/showering and even smaller in relation to stair-related injuries. Right now, in the I-Codes, the segment for bathing/showering is not addressed while many, many pages of the I-Codes deal with fire-related injury prevention. Again, the proposal for grab bars and other points of control to be provided equitably, will provide a major improvement to injury prevention that, heretofore, has been largely ignored in code development and in practice except in some hotel properties where no more than half of the grab bars or stanchions to be required under the new proposal are provided for bathtubs.

Figure 1.
Comparing three dangers resulting in injuries in buildings
International Codes, Scientific/Technical/Policy/Managerial Perspectives Precedent Set by NFPA Codes. The foregoing is the philosophical and epidemiological foundation for the proposed addition of requirements for grab bars, and stanchions in Section 1003 of the IBC and, in future or elsewhere, in the I-Codes generally. There is also the precedent taken in NFPA 101 and NFPA 5000 in their 2018 editions where grab bars (alternatively poles which are given the more-technical name “stanchions” in this IBC proposal) were proposed and almost completely adopted (with the exception of health care, discussed below) for new bathtubs and showers in buildings regulated by these codes. The new requirements were mostly noncontroversial and it is hoped that the same will be true with the proposals now submitted to the I-Codes.

The justification for the new requirements far outweigh the opposition to them as the ergonomic, biomechanics, epidemiological, etiological and economic aspects have been carefully considered and addressed to the satisfaction of many people who know building codes and safety standards well and whose votes on the many committees considering the issue attest to the multiple justifications for this new feature of building codes and safety standards.

Parallel Code Development Activity in Canada. A proposal, comparable to what NFPA has adopted, is being addressed by a Grab Bar Task Group for the National Building Code of Canada and, when its next cycle commences, will also be proposed for action by the ICC A117 Committee for a new section, on mainstreamed grab bar and stanchion features for the A117.1 standard. Leaders in the standards and codes field, conversant with the value of grab bars and stanchions have been discussing such mainstreaming since early 2016, at an international meeting of experts on bathing/showering safety held in Toronto and partly available for study in a free streaming video that is available with several other streaming videos addressing points of control, grab bars, cost-benefit issues, etc., that are all listed in the Bibliography provided with this proposal. So a lot of the groundwork has been laid and different perspectives have been elicited and discussed.

Survey of Existing Facilities. Centered on hotels, health care facilities**, airport airline club shower facilities*, and homes, the proponent for this code change has been conducting a personal, opportunity-based survey of bathing/showering facilities worldwide, including the following countries where his work on building use and safety has taken him in recent years or his work is followed by other professionals, including public health authorities.

- Canada**
- USA* **
- UK*
- Sweden**
- Finland
- Netherlands
- Italy
- Singapore*
The survey is documented in many hours of video and thousands of photographs plus many measurements of three-, four-, five-piece bathrooms ranging in size from a few square meters (20 square feet) to spaces big enough to park an automobile, occasionally with tubs and showers almost that big. Generally, the more compact the bathroom, the easier it is to provide the needed points of control—and with very substantial cost savings.

**Detailed Justifications for Specific New Sections in IBC 1003.**

1003.4 Slip Resistant Surface. Showers and bathtubs are part of the means of egress for a building as they form part of the “occupied portion of a building.” However, recognizing reality, due to the presence of water on standing and walking surfaces in and around showers and bathtubs, it is almost certain that those surfaces are not slip-resistant and thus an exception is needed to cover them. Therefore countermeasures, in the form of grab bars or stanchions are needed to mitigate these serious slip-and-fall risks. Thus, via a new exception, this is one of two scoping requirements triggering the mandatory provision of grab bars or stanchions found in a new section, 1003.8.

1003.5 Elevation Change. Bathtubs and most showers have elevation changes with various step-over and step-on surfaces, often exceeding 5 percent in slope, that greatly heighten the risk of missteps (such as tripping as well as slipping) and loss of balance that can result in injurious falls that are exacerbated by the typically hard, often projecting surfaces that are especially unforgiving if fall-related impacts occur. Grab bars and other points of control, like stanchions, have both prevention and mitigation roles, for such missteps and falls, that parallel what handrails do for stairs to prevent and mitigate missteps and falls. Thus, via a new exception, this is the second of two scoping requirements triggering the mandatory provision of grab bars found in a new section, 1003.8 as is demonstrated in Figure 2.

Figure 2.

Demonstration set up of both conventional grab bars (nominally meeting the length and location criteria of proposed IBC Section 1008) and heavy duty tubing, both horizontal and vertical—that latter being a stanchion (completely meeting the length, location and structural strength requirements of proposed IBC Section 1008)
1003.8.1 General. This sets out the scoping for the new section. In Figure 2, the photograph shows a demonstration bathtub-shower combination with a redundant set of both conventional (vertical and diagonal) grab bars and a vertical, floor-to-ceiling pole—technically termed a stanchion, the latter easily meeting the 250-pound structural load criterion. So does the full-length horizontal bar (a tube) at the back of the bathtub.

Section 1003.8.1 sets up a structure for the requirements; first addressed in 1003.8.2 for bathtubs and bathtub-shower combinations which require a vertical point of control for ambulatory entry to and egress from the bathtub that typically involves stepping over the bathtub wall and dealing with different, perhaps wet surfaces inside the tub and on the floor outside the tub. For some tubs there will also be an elevation difference between the tub bottom and the floor outside the tub that can be an additional danger. These are important ergonomic or biomechanics considerations for reasonably safe bathing and showering that will significantly reduce the large toll of falls and other injury events involving bathtubs and showers (as described for a few hundred cases in the Annexes accompanying this Reason statement).

Addressed second in 1003.8.1 is the need for a horizontal or diagonal point of control on the non-egress side of a bathtub that is covered by 1003.8.3. This addresses the need for a point of control that assists people who want to sit or lie down in the tub and have an immersion bath. This involves stand-to-sit and sit-to-stand transfers that will be facilitated with the bilateral support provided, on one side, by the vertical grab bar or stanchion required by 1003.8.2, on the other side, used in conjunction with the horizontal or diagonal grab bar required by 1003.8.3.

Addressed third in 1003.8.1 is ambulatory access into and egress from a stand-alone shower (not combined with a bathtub) addressed in 1003.8.4. While step-over heights are smaller than for bathtubs, there are still dangers in smaller heights of curbs needed for water control as well as in different elevations of the shower pan and the floor outside the shower. Again, a vertical point of control assists with such transfers.

The final scoping feature in 1003.8.1 is its reference to several details of the grab bars or stanchions dealing with their graspability, surroundings, structural characteristics, and long-term serviceability in the wet environment typical for baths and, more so, for showers.

1003.8.2. Stanchion or Grab Bar. This introduces the provision, approach, length, and position requirements for the required vertical point of control, a stanchion or a conventional, wall-mounted grab bar for bathtubs. Vertical grab bars were found to be especially useful in studies performed over the last two decades in Canada. (Bibliography: Items # 5, 23, 24, 29, 30 plus two reports, from 2017, by Novak & King and King & Novak.)

1003.8.2.1 Approach. The unobstructed clear floor space of 21 inches (535 mm) wide minimum and 21 inches (535 mm) deep minimum, measured from the tub wall, is based on the current space requirements of Section 307, including Figure R307, in the International Residential Code. Along with the 12-inch (305 mm) maximum horizontal distance between the point of control and the edge of the clear floor space, this provides reachability to the grab bar or stanchion for a user approaching, or stepping from a bathtub in a bathroom where there are other fixtures such as a water closet or lavatory.

1003.8.2.2 Length. The minimum length of 36 inches (914 mm) for the vertical grab bar or stanchion and minimum height of 60 inches serves ambulatory transfers by adults and children and provides a vertical point of control that extends low enough to serve bathers (children as well as adults) sitting or crouching in the bathtub.

1003.8.2.3 Position. The two options cover vertical, conventional, wall-mounted grab bars as well as stanchions (secured in place between, for example, the ceiling and the floor or the rim (top) of the tub wall) that can be located anywhere as they are not fastened to a wall, which for this requirement usually means one of the two end walls (control end wall and end wall) for many bathtubs. (See Figure 2 above.) Note that, for option 1, a grab bar on an end wall, there is an important requirement to keep the grab bar at least 6 inches (horizontally) from shower curtain attachments so that there is no interference, from a grab bar, to the sealing of a shower curtain against a wall to prevent water from a shower getting on the floor outside the bathtub. Note that option 2 permits placing a stanchion outside the bathtub, within six inches of the outside bathtub wall; such a stanchion can serve stand-to-sit and sit-to-stand transfer functions for users of a water closet adjacent to the bathtub (as shown in Figure 2). This is a bonus benefit of such stanchions which, in this proposal, are already sufficiently justified for the bathing and showering functions alone. Such a benefit (for many users) will be gained several times a day, as opposed to once per day for a shower or bath and the value of such secondary benefits—to usability and safety. This dual use benefit should be considered in doing a cost impact analysis. The benefit is especially important for older users who are the most impacted, in terms of serious injuries requiring hospital admission, and for whom toileting is essential, unlike showering or bathing which can be avoided more often.

1003.8.3. Grab Bar. This addresses the need for a point of control, on the non-egress, long side side of the bathtub where there is usually a wall (except in the case of a free-standing tub. This assists people, after they have stepped into the tub and who want to sit or lie down in the tub for an immersion bath. Note that while useful for stand-to-sit and sit-to-stand transfers, this horizontal or diagonal point of control will not be very useful for ambulatory transfers to and from a bathtub as a person has to lean precariously, threatening balance, over the width of the tub to reach the point of control on the non-egress side. Such transfers rely on the vertical point of control required by 1003.8.2.
1003.8.3.1. This does not limit compliance to a conventional wall-mounted grab bar. See Figure 2 for a nonconventional point of control, in effect a stanchion, in a horizontal orientation, secured by end walls, and extending the full length of the bathtub thus providing extra usability to bathers (as well as serving as a longer rack for towels, laundry, etc.). For free-standing tubs, with no adjacent walls, the requirements permit other solutions for the horizontal grab bar, for example, a conventional grab bar mounted on a surround often provided for most new stand-alone tubs.

1003.8.3.2 Diagonal Position. The stated dimensions for this diagonal grab bar will result in an approximate 45-degree inclination of this point of control that combines versatility with height as well as horizontal reach. Of all of the point-of-control positioning options, this one will almost invariably require a backing wall and this one places the greatest demand on structural backing—in terms of its size in the wall—for the fastening, typically with screws, of conventional grab bars. Keep in mind that the diagonal grab bar is an option and there are less-costly ways of complying with 1003.8.3.

1003.8.4 Showers. The requirement is intended to serve entering and egressing users regardless of whether the point of control is located inside or outside the shower enclosure or compartment. For example, fixing a point of control inside a shower is often problematic due to the nature of shower enclosures/compartment and of shower pans, both of which are subject to important waterproofing requirements. Here a stanchion, fastened to the room floor and ceiling and located just outside the entrance to a shower can be a good solution. This is especially true for increasingly used fixed, sliding or pivoting glass screens, for water control (in place of a shower curtain) on the open side of showers. The floor and ceiling take the usage loads on the stanchion whereas a conventional grab bar relies on a wall or wall-like feature.

1003.8.5 Other Details. Related mostly to effective and safe graspsability with one or both hands, these are largely based on requirements of ICC A117.1.

1003.8.5.1 Cross Section. Unlike ICC A117.1 only circular is addressed. This reflects the overwhelming provision of circular-section grab bars and stanchions in practice. Anyone wanting more flexibility with cross section could introduce, via an amendment to the proposal, a separate provision for noncircular sections also complying with ICC A117.1. The rationale for not including noncircular sections here is the overwhelming advantage of circular sections for hand approach from any direction, an important aspect of the more varied uses of points of control for bathing and showering facilities than is the case for handrails for stairs. Also, even for stairs, a large proportion of the railings installed—of decorative rather than reasonably functional, circular cross section—do not function sufficiently well for even the more-limited biomechanics of stair handrail use.

1003.8.5.2. Spacing. The 1.5 inches (38 mm) wide minimum space might not be adequate with some plumbing controls (e.g., water temperature), but it is a good starting point for adequate clearance.

1003.8.5.3. Surface Hazards. Impact against surfaces, including controls and spouts, in bathing and showering facilities is a major source injuries and the requirement are justified.

1003.8.6. Structural Characteristics. The minimum vertical or horizontal force of 250 pounds (1112 N)—applied at any point on the grab bar, stanchion, fastener, mounting device, or supporting structure—is commonly used in the US. There is a need for this to be maintained and confirmed through the life of the grab bars. (Canada has a somewhat higher load requirement, 290 pounds). The requirement that points of control will not rotate within their fittings is reasonable as it increases the effectiveness of a user’s grasp and the users’ stability generally.

1003.8.7. Design and Installation for Water. This is a relatively new requirement but it is very much needed, based on the proponent’s checking of fixing quality of many grab bars in hotels around the world. Many grab bars are not designed, installed and maintained for water! Water might not only corrode the critical attachment screws of conventional, wall-mounted grab bars; water also causes deterioration of the backing materials for some badly installed and maintained grab bars. This one, relatively new requirement warrants extra explanation—which follows here.

Problems Found in the Field with Conventional Grab Bars

During the course of his opportunity-based survey of grab bars provided for bathrooms in hotel guest rooms, the proponent of this code change has found two problems with many installations.

The first, affecting over 50 percent of the surveyed bathtub-shower combinations in hotels, comes from placement of vertical grab bars underneath—and within a few inches horizontally of the end bracket for shower curtains. This makes sealing the shower curtain against the end wall of the bathtub-shower combination very difficult so that the danger of water getting outside the bathtub, on the adjacent floor is heightened unreasonably and needlessly. The proposed section1003.8.2.1 addresses this problem in its last sentence, “Such grab bar shall be located a maximum of 12 inches (305 mm), measured horizontally, inside of the exterior approach side of the bathtub or bathtub-shower combination and no closer than 6 inches (150 mm), measured horizontally, to the end fixing of any shower curtain rod.”
A much more worrying problem is found with a smaller percentage of conventional, wall-mounted grab bar installations, specifically grab bars which have cover plates over the screw plate onto which the tube of the grab bar is welded. There is invariably a space between the hole in the cover plate through which the tubing (grasped) portion of the grab bar passes and the tubing itself. Water can easily enter here and get trapped by the cover plate thus creating a pool of water and debris (hair, shampoo residue, etc.) from the showering process. Figure 3 provides an example photographed on the wall of a bathtub-shower combination in a hotel guest bathroom.

Figure 3. Corrosion behind grab bar cover plate

Aside from the hygiene problem here, there is a greatly heightened risk of two structural problems. One is water intrusion into the wall, around the fixing screws—typically two or three for each end of the grab bar, causing deterioration of the backing material so the screws become loose enough to be extractable with ones fingers. The second problem is equally worrisome, especially as the quality of the steel used in (off-shore) grab bars is relatively poor in terms of corrosion of the screws and, less often, the mounting plates. The worst case seen recently had the heads of all the screws holding a grab bar so corroded that their heads were completely deteriorated and the grab bar could be pulled away from the walls with little force by one hand—clearly far, far less than the stipulated load of 250 pounds that codes in the US stipulate for structural strength. The proponent has many photographs of these problems as well as a few videos showing how loose the grab bars have become due to corrosion as well as backing deterioration from water. One such photograph is provided in Figure 3; it is not the worst situation seen in the field.

Clearly such examples need to be addressed in several ways including stronger inspection by authorities and improved management of facilities. Improved design and manufacture of conventional grab bars would help too but, until that occurs, this proposal offers the pole options as well as mounting locations that keep the important “points of control” in relatively dry locations—for example at the exterior of a shower enclosure or outside of a shower curtain for tubs and showers—but still near enough to the entrance to be usable from both outside and inside the space where water sprays, deflects and flows freely.

Annexes

Annex 1: Representative sample of narratives of actual bathtub/shower-related injuries that led to US hospital emergency room (ER) visits and, for about one in ten of such visits, also led to hospital admission covered by Annex 2, (plus an additional 30 percent who went directly to hospital admission without an ER visit) in 2010. These are collected and published by the US Consumer Product Safety Commission (CPSC) National Electronic Injury Surveillance System (NEISS) and many more can be downloaded from the CPSC/NEISS Web site, https://www.cpsc.gov/Research--Statistics/NEISS-Injury-Data. Accessed January 8, 2018.

Annex 1: US CPSC NEISS: First 112 Sample Narratives (of 6,946 cases) for Product Code 0611 Injuries
in 2010 – **ER released w/wo treatment** (Product Code 611 covers bathtubs or showers including fixtures or accessories; excluding enclosures, faucets, spigots and towel racks)

41 YOM FRACTURED A RIB BY SLIPPING IN THE BATHTUB & FALLING AGAINST THE TOILET AT HOME.

53 YOF SUSTAINED A CONTUSION OF A SHIN BY BUMPING IT WHILE SHOWERING AT HOME.

18 YOF SPRAINED HER LOWER BACK BY FALLING IN THE SHOWER AT SCHOOL.

02 YOF SUSTAINED A LACERATION OF THE CHIN BY FALLING IN THE BATHTUB AT HOME.

18 YOF SUSTAINED A HEAD INJURY BY FALLING IN A SHOWER AT HOME.

80 YOM DISLOCATED A HIP BY LIFTING LEG IN SHOWER.

86 YOF SUSTAINED A LACERATION OF THE SCALP BY TRIPPING ON A RUG IN THE SHOWER AT HOME.

71 YOF SUSTAINED A HEAD INJURY BY FALLING FROM TOILET AGAINST THE BATHTUB AT HOME.

68 YOF SPRAINED AN ANKLE BY FALLING IN A SHOWER.

47 YOF FRACTURED A KNEE BY FALLING IN THE SHOWER AT HOME.

02 YOF SUSTAINED A LACERATION OF THE CHIN BY FALLING IN THE BATHTUB.

22 YOM SPRAINED A FOOT WHILE STEPPING OUT OF A SHOWER AT JAIL.

23 YOF SUSTAINED A CONTUSION OF A FOOT BY TRIPPING ON A RUG & STRIKING AGAINST A TUB AT HOME.

40 YOM SUSTAINED A LACERATION OF THE NOSE FROM BEING STRUCK BY THE SHOWER HEAD IN THE SHOWER AT HOME.

21 MOM RUPTURED AN EAR DRUM WITH A COTTON-TIPPED SWAB WHILE BATHING IN TUB AT HOME.

48 YOF SUSTAINED A CONTUSION OF THE NECK BY FALLING IN THE BATHTUB AT HOME.

04 YOF SLIPPED IN BATHTUB FELL AND INJURED FACE DX/ FACIAL LAC L KNEE STR

10 YOF FELL OUT OF SHOWER AND INJURED L KNEE. HAS ABRASION TO KNEE ALSO

80 YOF FELL IN SHOWER AT HOME HIT HEAD. DX/ HEAD INJURY

94 YOM SLIPPED AND FELL IN SHOWER AND HIT FACE ON FLOOR. DX/ FACIAL FX

55 YOM SLL LEG HEMATOMA

72 YOF CAUGHT FOOT IN TUB, INJURING LOWER LEG. NOW HAS HEMATOMA AND INCREASING PAIN.

22 YOF AT HOME FAINTED WHILE IN SHOWER AND FELL CUTTING FOREHEAD.

26 YOF SLIPPED AND FELL IN TUB DX: KNEE STRAIN

90 YOF GETTING OUT OF SHOWER WITH WALKER SLIPPED ON THE FLOOR AND HIT HEAD DX/ SCALP ABRASION

30 YOM SLIPPED AND FELL INTO TUB DX: CONTUSION TO BACK

51 YOF SLIPPED IN TUB AND HIT HEAD DX/ SCALP LAC

60 YOF SLIPPED AND FELL IN TUB DX: CONTUSION TO COCCYX

44 YOM FELL AND HIT ABDOMEN ON BATHTUB AT HOME. DX/ ABDOMINAL CONTUSION

04 YOM WITH CUT TO FACE FELL IN TUB DX: LACERATION TO FACE

51 YOF AT HOME FELL AT 5PM WHEN LOST BALANCE AND HIT L SIDE OF RIBS ON BATHTUB.
33 YOF SLIPPED AND FELL IN TUB DX: HEAD LACERATION
23 MOM FELL IN BATHTUB AT HOME AND HIT CHIN CAUSING LACERATION.
62 YOM WITH BACK PAIN FELL INTO TUB DX: CONTUSION TO LOWER BACK
63 YOF FELL INTO BATHTUB / NO INJURIES OR COMPLAINTS
54 YOM SLIPPED AND FELL IN TUB DX: RIB FRACTURE
02 YOM SLIPPED IN TUB AT HOME AND INJURED FACE DX/ CHIN LAC
25 YOF WITH CHEST PAIN AFTER FALL INTO TUB DX: CONTUSION TO CHEST
84 YOM FELL OUT OF SHOWER ON TO THE FLOOR AT HOME HIT HEAD DX/ HEAD INJURY
85 YOF SLIPPED AND FELL IN TUB AND HIT HEAD AT HOME DX/ HEAD INJURY
06 YOM AT HM WAS TAKING A BATH & SWIMMING IN TUB WHEN HE STRUCK HIS HEAD AGAINST FAUCET CAUSING HEAD LACERATION.
28 YOM AT HOME FELL IN SHOWER. WAS RESPONSIVE PER EMS.
26 YOF SLIPPED / FELL IN THE SHOWER DX: R EAR LAC. / HEAD & R SHOULDER CONTUSION
36 YOF THIS AM SLIPPED WHILE TRYING TO GET OUT OF BATHTUB AND LANDED ON BUTTOCKS.
28 YOF RIPPED FINGER NAIL OFF WHEN SLIPPED IN THE SHOWER AND THE NAIL BENT BACKWARDS.
26 YOF INJURED KNEE STEPPING OUT OF SHOWER DX/ RIGHT KNEE SPRAIN
50 YOM FELL IN BATHTUB AND HIT CHEST DX/ RIB FX
83 YOM CUT SCROTUM FELL IN TUB DX: LACERATION TO SCROTUM
71 YOF FELL OUT OF BATHTUB AT HOME AND HIT HEAD ON THE FLOOR DX/ HEAD INJURY
89 YOF FELL IN TUB HITTING HEAD DX: CLOSED HEAD INJURY
69 YOF WAS IN SHOWER AND FELL BACKWARDS STRIKING HER BACK.
08 YOF AT HOME LACERATED FACE ABOVE R ORBITAL. HIT HER HEAD ON SOAP DISH WHILE SHOWERING. NO LOC.
40 YOM SLIPPED AND FELL IN SHOWER AND INJURED CHEST. DX/ RIB FX
17 YOF FELL IN TUB HURT NECK DX: NECK STRAIN
23 YOM INJURED LOWER BACK BENDING OVER IN SHOWER AT HOME DX/ LUMBAR STRAIN
83 YOF FELL IN THE TUB AT ASSISTED LIVING AND INJURED SHOULDER DX/ RT SHOULDER CONTUSION
02 YOM HIT FACE ON BATHTUB AT HOME DX/ FACIAL LAC
74 YOM FELL AND HIT HEAD IN TUB DX: CONTUSION TO HEAD
85 YOF SLIPPED AND FELL GETTING OUT OF TUB DX: CONTUSION TO HIP
58 YOF SLIPPED AND FELL INTO TUB HIT HEAD DX: CLOSED HEAD INJURY
13 MOM AT HOME FELL IN BATHTUB AND HIT FOREHEAD AND MOUTH.
06 YOM SLIPPED IN BATHTUB AND HIT HEAD DX/ HEAD CONTUSION
78 YOM SLIPPED AND FELL IN TUB DX: LACERATION TO HEAD
08 YOM SLIPPED IN TUB TWISTED ANKLE DX: ANKLE STRAIN

51 YOF HIT HEAD ON SOAP DISH IN SHOWER 2 TIMES THIS WEEK HAS HEADACHE DX/ CONCUSSION

51 YOF SLIPPED IN SHOWER AND INJURED KNEE AT HOME DX/ RIGHT KNEE CONTUSION

83 YOM SLIPPED AND FELL IN THE SHOWER LAST NIGHT AND INJURED BACK DX/ BACK PAIN

31 YOM HIT EYE WITH TOWEL WHILE GETTING OUT OF THE SHOWER AT HOME DX/ RIGHT EYE CORNEAL ABRASION

24 YOF FELL GETTING OUT OF SHOWER HIT HEAD DX/ SCALP LAC

48 YOF SLIPPED IN SHOWER HIT HEAD + LOC DX/ HEAD INJURY

11 YOM SLIPPED IN SHOWER AND INJURED LEG. DX/ LEFT LEG CONTUSION

30 YOF SLIPPED AND FELL INTO TUB DX: CONTUSION TO HIP

18 MOM FELL IN TUB DX: LACERATION TO FACE

46 YOF SLIPPED AND FELL IN TUB DX: CONTUSION TO LOWER BACK

30 YOM CUT HAND ON BROKEN SOAP DISH AT HOME. DX/ RIGHT HAND LAC

70 YOF SLIPPED AND FELL IN TUB DX: CONTUSION TO CHEST

31 YOM CUT THUMB ON SHOWER DRAIN THIS AM.

62 YOF SLIPPED IN THE SHOWER AND FELL ON THE FLOOR AT HOME DX/ LEFT WRIST SPRAIN

67 YOM FELL GETTING OUT OF SHOWER HIT HEAD ON TUB AT HOME DX/ SCALP CONTUSION

45 YOF PASSED OUT IN SHOWER AT GROUP HOME HIT HEAD. DX/ HEAD INJURY

04 YOF FELL IN BATHTUB AND HIT MOUTH DX/ LIP LAC

43 YOM SLIPPED IN BATHTUB AND INJURED KNEE DX/ LEFT KNEE CONTUSION

15 YOM TAKING SHOWER AND SHOWER DOOR SHATTERED AND PT FEET WERE CUT WITH THE GLASS AT HOME DX/ BILAT FOOT LAC

73 YOF AT 9AM TODAY WAS GETTING OUT OF TUB AND SLIPPED AND BUMPED L RIBS ON THE TUB. C/O RIB PAIN.

87 YOF BENT DOWN TO PUT SCALE AWAY FELL AND HIT INTO TUB AT HOME DX/ LEFT HIP CONTUSION

22 YOM FELL IN TUB AT HOME AND INJURED CHEST DX/ RIB FX

40 YOF SLIPPED GETTING OUT OF BATHTUB AND INJURED LOWER BACK DX/ LOW BACK PAIN

34 YOM FELL AND HIT TUB DX: SHOULDER STRAIN

70 YOF SLIPPED FELL HIT CHEST ON SIDE OF TUB DX: CONTUSION TO CHEST

89 YOF SLIPPED AND FELL IN THE SHOWER LAST NIGHT AT NURSING HOME INJURED CHEST DX/ CHEST CONTUSION

44 YOM FELL IN TUB AND HIT CHEST DX.CHEST CONTUSION

36 YOF SLIPPED AND FELL IN TUB DX: LACERATION TO FACE

56 YOM CUT WRIST ON BROKEN SHOWER KNOB AT HOME DX/ LEFT WRIST LAC

88 YOF FELL AT HOME IN SHOWER AND HIT HEAD ON TUB DX/ SCALP CONTUSION

51 YOM SLIPPED AND FELL IN TUB DX: NECK STRAIN

23 YOM FELL IN BATH TUB AND INJURED CHEST DX/ CHEST CONTUSION
59 YOM FELL IN SHOWER AND INJURED SHOULDER DX/ LEFT SHOULDER FX
46 YOM HAD FALL HIT TUB DX: CONTUSION TO FACE
78 YOF FELL AT HOME AND HIT FACE ON BATHTUB DX/ FACIAL CONTUSION
29YOF WITH BACK PAIN AFTER FALL IN TUB DX: LOW BACK STRAIN
31 YOF FELL GETTING OUT OF TUB AT HOME INJURED FLANK DX/ FLANK CONTUSION
72 YOF AT HOME FELL WHEN SLIPPED ON URINE IN BATHROOM AND HIT HEAD ON SIDE OF BATH TUB.
19 YOF SLIPPED AND FELL INTO TUB DX: CONTUSION TO LOWER BACK
08 YOM FELL IN THE SHOWER AT HOME AND HIT EAR DX/ LEFT EAR LAC
62 YOM SLIPPED / FELL IN THE SHOWER. DX: RIB CONTUSION
09 YOF FELL IN TUB AND HIT LIP. DX/ LIP LAC
56 YOF WITH SHOULDER PAIN AFTER USING BATHBRUSH IN SHOWER DX: SHOULDER STRAIN
75 YOF AT HOME FELL OFF HASSOCK APPROX 30 MIN AGO HITTING HEAD AND L ARM ON BATHTUB. DENIES LOC.
62 YOF SLIPPED IN TUB HITTING FOOT DX: CONTUSION TO FOOT
04 YOM SLIPPED IN THE BATHTUB AND HIT CHIN DX/ CHIN LAC
34 YOM FELL IN THE SHOWER AT HOME INJURED BACK DX/ BACK SPRAIN
25 YOF + ETOH BAL 313 FELL IN SHOWER AND HIT HEAD DX/ HEAD CONTUSION

Annex 2: US CPSC NEISS: First 48 Sample Narratives (of 630 cases) for Product Code 0611 Injuries in 2010 - ER treated & Then Admitted to Hospital (Product Code 611 covers bathtubs or showers including fixtures or accessories; excluding enclosures, faucets, spigots and towel racks)

89 YOF GETTING OUT OF THE SHOWER THE NEXT THING SHE KNEW SHE WAS ON THE FLOOR WITH HEAD AND SHOULDER INJURY; SHOULDER AND HEAD CONTUSION
69 YOM WAS WASHING HIMSELF IN SHOWER, FELL ONTO BLUNT PART OF BATHTUB, IMMEDIATELY HAD PAIN & TROUBLE BREATHING. DX - MULTIPLE RIB FXS
56 YOF SLIPPED IN THE SHOWER AND FELL FORWARD HITTING HER FACE & INJURING HER RT ARM- DX- MECHANICAL FALL W/ FRACTURE RT SHOULDER
78 YOF FAMILY FOUND HER ON THE FLOOR BETWEEN TOILET AND BATHTUB, SHE STATED SHE PASSED OUT WHEN SHE WAS IN SHOWER;SHOULDER INJURY
47 YOM HAD A WET SHEETROCK FALL ON HEAD WHILE IN SHOWER, +LOC, WAS CONFUSED. DX - BLUNT HEAD TRAUMA W/BRIEF LOC
62 YOM HAD A SYNCOPEAL TODAY AT HOME IN THE SHOWER INJURING EYE AREA- DX- LACERATION TO FACE( EYE)
78 YOF PRESENT TO ER FROM HOME WHEN SHE WAS TAKING A BATH AND COLLAPSED - DX- CARDIAC ARREST, RESUSCITAED
43 YOM PRESENT TO ER AFTER HE WAS IN THE BATHTUB AND SLIP AND FELL GETTING OUT HITTING HEAD ON FLOOR- DX- BLUNT HEAD TRAUMA
81 YOM PRESENT TO ER AFTER A FALL IN THE SHOWER AT HOME TODAY INJURING THE HEAD AREA- DX- BLUNT HEAD TRAUMA
41 YOM FELL OUT OF SHOWER AT ASSISTED LIVING HOME YESTERDAY ONTO RT SIDE C/O RT HIP & RT LEG PAIN. DX - RT HIP FRACTURE
80 YOF TRYING TO GET OUT OF BATHTUB ACCIDENTLY FELL INJURED LOWER BACK; BACK CONTUSION AND AMBULATORY DYSFUNCTION
92 YOM PRESENT TO ER AFTER A FALL IN BATHTUB THIS MORNING INJURING RT HIP; DX - FRACTURE RT LOWER TRUNK (HIP)

88 YOF PRESENT TO ER AFTER A FALL IN BATH TUB AT SNF INJURING LT HIP; DX - FRACTURE LT LOWER TRUNK (HIP)

88 YOF WAS GETTING OUT OF SHOWER, FELT DIZZY & FELL STRIKING BACK OF HEAD ON FLOOR INJURING LT ARM; DX - SKIN TEAR LACERATION

88 YOF GETTING OUT OF BATHTUB THIS MORNING FELL TRIED TO BRACE HERSELF INJURED SHOULDER; SHOULDER FRACTURE

71 YOF WAS FOUND DOWN BY SON IN BATHTUB AT HOME, HAS INJURY TO LT EYE & FOREHEAD, IS REPETITIVE; DX - BLUNT HEAD TRAUMA, +ETOH

86 YOF LOST BALANCE WHEN SHE TURNED AROUND & FELL INTO BATHTUB C/O LOW BACK PAIN; DX - LOW BACK PAIN, POSS FX VS CONTUSION

80 YOF HUSBAND DID NOT WANT HER SMOKING IN HOUSE, WENT TO BATHROOM STOOD ON THE TOILET, OPENED WINDOW, SLIPPED BETWN TOILET/TUB; PELVIC FX

44 YOF FELL IN SHOWER TODAY SUSTAINING HEAD INJURY; DX - SCALP LACERATION

37 YOF SUSTAINED A MECHANICAL FALL IN SHOWER ONTO RT UPPER EXTREMITY, C/O RT SHOULDER PAIN; DX - RT DISTAL CLAVICLE FX

37 YOM HAD A GROUND LEVEL FALL IN BATHROOM STRIKING LOWER BACK ON BATHTUB; DX - SPINAL CONTUSION

84 YOF HAD SYNCOPAL EPISODE IN SHOWER AND FELL; DX: L 10TH RIB FX, INABILITY TO AMBULATE.

87 YOF FELL IN SHOWER; DX: Rhabdomyolysis.

93 YOF FELL IN SHOWER AT ASSISTED LIVING; DX: L DISTAL HUMERUS FX.

79 YOM FELL IN SHOWER; DX: A FIB W/RAPID VENTRICULAR RESP, SYNCOPE, SDH, SAH, ELEVATED INR.

84 YOF FELL WHILE GETTING OUT OF BATHTUB SUSTAINING A FRACTURE TO HER LUMBAR SPINE

90 YOF SLIPPED IN BATHTUB AND GRAZED HEAD ON SHELF AT ASSISTED LIVING; DX: R KNEE STRAIN W/POSS INTERNAL DERANGEMENT, CLOSED HEAD INJURY.

82 YOF WITH NO INJ FROM FALL IN TUB

85 YOM WITH NO IN, FELL IN BATHTUB, ADMITTED FOR OTHER REASONS

52 YOM W/ALS FELL AND BECAME STUCK BETWEEN TOILET AND TUB; DX: Rhabdomyolysis Status Post Fall, Nasal FX.

95 YOF FELL IN SHOWER SUSTAINING CHEST CONTUSION

71 YOF SLIPPED AND FELL IN SHOWER; DX: SYNCOPE, LARGE HEAD LAC, COAGULOPATHY, HYPOKALEMIA, LONT QT, ALCO

79 YOF FELL IN SHOWER SUSTAINING A FRACTURED KNEE

87 YOF WITH RIB FRACTURE FROM FALL IN TUB

79 YOM WITH LOWER BACK STRAIN FROM FALL IN SHOWER

81 YOF TURNED IN SHOWER AND FELL SUSTAINING A FRACTURED HIP

97 YOF FELL IN THE SHOWER AT NURSING HOME; DX: Traumatic SDH, Agitation.

70 YOF FELL IN SHOWER AT HOME AND WAS UNABLE TO GET UP, SUSTAINED CHI, BACK CONTUSIONS

88 YOF FELL AGAINST BATHTUB AND WALL AT ASSISTED LIVING; DX: BACK/SHOUL PX, SYNCOPE, STAGE I THORACIC DECUBITUS ULCER, MULT OLD THORACIC FX’S.

88 YOF SLIPPED ON WET FLOOR GETTING OUT OF SHOWER AT NURSING HOME; DX: BACK CONT, PNEUMONIA, HYPOXEMIA, PLEURAL EFFUSION.
41 YOF WITH NO INJURIES FROM FALL IN SHOWER, WAS ADMITTED

83 YOM FELL IN THE SHOWER. DX: TRAUMATIC ICH, FACIAL LAC, CONCUSSION W/O LOC, RENAL FAILURE.

94 YOM FELL GETTING OUT OF THE SHOWER AND HIT HEAD SUSTAINING A LACERATION

79 YOM FELL ON SIDE OF BATHTUB. DX: SYMPTOMS, CHEST WALL CONT.

55 YOM SLIPPED AND FELL IN BATHTUB. DX: R HEMOTHORAX/PNEUMOTHORAX, MULT R RIB FX'S.

95 YOF TRIPPED OVER THROW RUG WHILE GETTING INTO SHOWER AT HOME DX: AVULSION TO FACE/ MALIGNANT HYPERTENSION

53 YOF SLIPPED IN SHOWER AND FELL HITTING HIP ON TOILET AT HOME DX: STRA

Bibliography:

Bibliography for Jake Pauls Proposal for IBC Section 1003 on Grab Bars for Bathtubs, Bathtub-Shower Combinations and Showers

Approximately 50 internationally-produced scientific and technical references, on bathing/showering safety, were compiled by the proponent, in 2016, for an American Public Health Association (APHA) draft policy highlighting, especially two Canadian research studies that also are addressed in video presentations by Principal Investigators (Dr. Nancy Edwards, Dr. Alison Novak) for the research and posted, for free streaming viewing at, https://vimeo.com/164239941 Accessed January 8, 2018. Additional videos covering technical aspects of bathing and showering safety (including cost impact and benefit issues*) are found at the following links (all of which are available, with descriptions, at www.bldguse.com, the proponent’s Professional Practice Website, Accessed January 8, 2018.).

- https://vimeo.com/237294479
- https://vimeo.com/239276202 *
- https://vimeo.com/197742277
- https://vimeo.com/193507768
- https://vimeo.com/173883358
- https://vimeo.com/175101448 *
- https://vimeo.com/117572176

Bibliography Entries. The draft policy statement, for APHA consideration in 2016, was titled, “Improving Fall Safety and Related Usability of Bathrooms within Buildings through Safety Standards, Building Codes, Housing Codes and Other Mechanisms.” (The numbers shown for this bibliography—in connection with the ICC code change proposal—are those used in the 2016 draft policy.)

23. Sveistrup H. Patterns of use of different toilet grab bar configurations by community-living older adults Research Highlight (Canada Mortgage and Housing Corporation) 2013.


44. Stevens JA, Phelan EA. Development of STEADI: A fall prevention resource for health care providers. Health Promot Pract. 2013;14(5): 706–714. (See Table 2 where the brochure, Check for Safety, is listed under Patient educational materials.)


Other items for the Proposal Bibliography (from post-2016 sources) and one earlier paper specific to (transfer) pole-type grab bars which are included in the IBC proposal.


Vena D, Novak AC, King EC, Dutta T, & Fernie GR. The Evaluation of Vertical Pole Configuration and Location on Assisting the Sit-to-Stand Movement in Older Adults with Mobility Limitations. Assistive Technology 27, 4, 2015, Available at http://www.tandfonline.com/doi/full/10.1080/10400435.2015.1030514. Accessed January 8, 2018. (In referring to sit-to-stand transfers, as from a toilet, this article uses the term, “transfer poles,” to describe the configuration and location of “poles” referred to in the code change proposal.)

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

The code change proposal will increase the cost of construction, but that increased cost pales in comparison to the benefits of enhanced usability and reduction of fall injuries.

The additional material in the form of conventional grab bars or poles plus their fixings is about 50 dollars per grab bar or pole (using retail prices for the components confirmed as recently as 2017) and with a conventional three-fixture bathroom with a bathtub there would be a need for two such grab bars or poles or one of each. Labor to install these would be about one hour for each. Thus an overall, installed cost is on the order of $200 per bathroom. The service life would be on the order of two or more decades.

Against this added cost of an installed single grab bar or two per bathroom there are the ongoing benefits of enhanced normal (non-injury) uses which, for a typical US household for a 20-year period, for example, number about 7,000 per person or on the order of 20,000 per household. Those enhanced uses, with grab bars, have an economic value that is larger than the benefit of averted injuries from falls.

2018 ICC PUBLIC COMMENT AGENDA
Currently without grab bars, our bathtubs and showers are the site of injuries serious enough to require professional medical attention at a rate, annually (using 2010 data) of about 1 million per 110 billion uses or about one in 110,000 uses. Every one of those non-injury uses has a value. By comparison, for stairs this ratio is about one professionally treated fall injury for every million flight uses in home settings and one such injury for every ten million flight uses in public settings where, under the IBC and more-detailed inspection procedures, stairs are nearly one order of magnitude safer than those nominally constructed under the IRC. See the video presentation by Jake Pauls to the April 2017 meeting, “The Impact of Building Codes and Standards in Public Health and Safety,” held in Melbourne, Australia, in connection with the 15th World Congress on Public Health. The streaming video containing this presentation, which includes the “Injury Pyramids” used for the above stair safety calculation, is available freely at https://vimeo.com/239276202 (as listed in the first part of the Bibliography accompanying this proposal) accessed Jan 8, 2018.

The injuries-averted benefit, over twenty years, has a value, in 2010 dollars, about 6.5 times greater than the installation cost, based on the very reasonable assumption that half the falls are averted with the specified grab bars or poles. For the vertical poles that also enhance and make safer the use of toilets that, being adjacent to a bathtub, can serve stand-to-sit and sit-to-stand transfers for toileting, this benefit increases by about 35 percent to nearly 9 times greater than the installation cost. These projections are based on the injury economic data provided by the 2015 paper in the respected journal, *Injury Prevention*, by Lawrence, Spicer and Miller (see Bibliography for details).

The bottom line is that the benefits of both enhanced normal uses, in the tens of thousands per household over a 20-year period, combined with the benefit of averted injuries, is on the order of at least 20 or more times the cost of providing the grab bars, especially if they take the form of vertical poles serving bathtub-shower combination users as well as toilet users in a three-piece bathroom provision that is very common in homes and hotels, for example. For hotels, while the lavatory sink(s) may be in a separate space, the toilet and bathtub-shower combination are usually close together so that a single pole can serve transfers for both. Thus the cost impact of grab bar or pole installations is very small in relation to the benefits and that cost of installation is very small in relation to the overall price of a dwelling unit or hotel guest room for example.

Finally, the choice of residential settings for the foregoing benefit-cost analyses, reflects the greater attention such occupancies often receive in code change deliberations. Healthcare occupancies could also have been chosen for analyses as estimates of fall-related injuries to patients are that about “one-third of reportable falls with injuries in hospitalized older adults are linked to bathroom use” (quoted from reference identified as number 47 in the Bibliography for this proposal). Notably, in the recent NFPA deliberations on installation of grab bars, only healthcare occupancies were not included due to healthcare industry and healthcare fire protection engineering consultants’ opposition based on the claim that patients in healthcare were not permitted to use bathrooms without supervision. The personal, post-fall (with closed-head injuries) experience recently by the proponent of this code change in three hospitals in Sweden, Australia and the USA, seriously questions this industry claim as well as the implicit assumption that bathrooms in healthcare provide reasonable safety from falls suffered in the course of toileting as well as bathing. Too often, the wheeled stand (with the vertical pole holding fluid being administered intravenously) is the most reliable “point of control” such patients have between their beds and toileting/bathing facilities either in the patient bedrooms or “down the hall.”
Public Hearing Results

Committee Action: Disapproved

Committee Reason: There was an issue with the location in the code. Historically showers and tubs have not been considered part of the circulation path for means of egress as indicated in this proposal. The proposal should not include exceptions for slip resistance or stepping over the tub edge or shower threshold. It was suggested that perhaps a better place for a requirement for grab bars would be Section 1209 with the other interior wall requirements for toilet and bathing rooms.

From a scoping perspective, apartments and condominium already have Type A and Type B requirements for blocking for the future installation of grab bars, and these requirements may conflict with that. In nursing homes and hospitals these grab bars may conflict with the space needed for mobility equipment and transfers. In Accessible units, the vertical station would be an obstruction for transfer to the tub, and the grab bar requirements are not coordinated with ICC A117.1. It was suggested that the non-accessible bathrooms in hotels may be type of facility to start with to reduce slip and fall issues with grab bars at the tubs and showers.

Technical issues - What is the justification for the grab bar locations and lengths? How would the vertical station work with shower/bathtub doors or curtains? How would the ends of the vertical station attach to the floors, tub edge or ceiling? What happens at larger showers, gang showers, or showers with glass or no walls on some sides? (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Jake Pauls, representing Jake Pauls Consulting Services (bldguse@aol.com) requests As Modified by This Public Comment.

Replace as follows:

2018 International Building Code

1209.4 Grab bars for bathtubs, bathtub-shower combinations and showers. At bathtubs and bathtub-shower combinations where grab bars complying with ICC A117.1 are not provided, a vertical grab bar complying with Section 1209.4.1 and a grab bar complying with Section 1209.4.2 shall be provided. At showers where grab bars complying with ICC A117.1 are not provided, a vertical grab bar complying with Section 1209.4.3 shall be provided. All grab bars required by this section shall comply with Sections 1209.4.4 through 1209.4.8. Nonconventional grab bars, such as stanchions, shall be permitted.

Exceptions:

1. Group I-2 occupancy where care recipient usage of bathing and showering facilities are assisted by staff.
2. Group 1-3 occupancy where bathing and showering facilities serve inmates or detainees.

1209.4.1 Vertical grab bar. A vertical grab bar shall complying with Sections 1209.4.1.1 through 1209.4.1.3.

1209.4.1.1 Approach An unobstructed clear floor space of 21 inches (535 mm) minimum in width and 21 inches (535 mm) minimum in depth, adjacent to the tub wall shall be provided. The clear floor space shall be located outside the tub and be within 12 inches (305 mm) of the center line of the vertical grab bar measured horizontally.

1209.4.1.2 Length The vertical grab bar shall be 36 inches (914 mm) minimum in length and with its upper end 60 inches (1525 mm) minimum above the floor.

1209.4.1.3 Position The vertical grab bar shall be positioned in accordance with one of the following:
1. Where the vertical grab bar is located inside the bathtub footprint, the center line of the vertical grab bar shall be 12 inches (305 mm) maximum from exterior wall of the bathtub and no closer than 6 inches (150 mm) to any shower curtain rod attachment.

2. Where the vertical grab bar is located outside the bathtub footprint, the center line of the vertical grab bar shall be 6 inches (152 mm) maximum from the exterior wall of the bathtub.

3. The vertical grab bar’s lower attachment is on the rim of the bathtub.

1209.4.2 Rear wall grab bar. A grab bar shall be provided on the back wall of the bathtub or bathtub-shower combination and shall be positioned in accordance with Section 1209.4.2.1 or 1209.4.2.2.

1209.4.2.1 Horizontal Position The horizontal grab bar shall be located 8 inches (205 mm) minimum and 10 inches (255 mm) maximum above the rim of the bathtub. The grab bar shall be 24 inches (610 mm) minimum in length and extend to be 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.

1209.4.2.2 Diagonal Position The diagonal grab bar shall be located with the lower end 8 inches (205 mm) minimum and 10 inches (255 mm) maximum above the rim of the bathtub and the higher end 25 inches (635 mm) minimum and 27 inches (685 mm) maximum above the bathtub rim. The grab bar shall be 24 inches (610 mm) minimum in length and extend to be 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.

1209.4.3 Showers A vertical grab bar shall be provided to either side of the opening to the shower and located with the center line within 3 inches (76 mm) of the interior or exterior of the shower threshold, measured horizontally. The grab bar shall be 24 inches (610 mm) minimum in length with the lower end 39 inches (991 mm) maximum above the floor and the higher end a minimum of 61 inches (1550 mm) above the floor.

1209.4.4 Cross Section. Grab bars shall have a circular cross section with an outside diameter of 1-1/4 inches (32 mm) minimum and 2 inches (51 mm) maximum.

1209.4.5 Spacing The space between the grab bar and any adjacent surfaces or projecting objects shall be 1-1/2 inches (38 mm) minimum.

1209.4.6 Surface Hazards Grab bars and any walls or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements. Edges shall be rounded with a minimum radius of 0.25 inch (6 mm).

1209.4.7 Structural Characteristics Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure. Grab bars shall not rotate within their fittings.

1209.4.8 Design and Installation for Water Grab bars, fasteners, mounting devices, and supporting structure shall be designed and installed to resist the damaging effects of water.

Commenter’s Reason: (1) Committee Comments. First, I thank the IBC Egress Committee and staff for pointing out the preferred location in the IBC for a set of requirements on improved safety for bath and shower facilities. Especially appreciated was ICC Staff opining that a relocation of the proposed requirements to Section 1209 would be in order and facilitating my comment. My public comment accomplishes this preferred positioning of the requirements mostly as originally proposed with some edits and deletions described here.

(2) The matter of the original proposals suggested exception for “slip resistance” has been addressed completely. There is no reference to “slip resistant” or “means of egress” (Sections 1003.4 and 1003.5) in the re-positioned requirement.

(3) On blocking requirements, my testimony on the IRC and IBC proposals, made clear that blocking was not an effective solution or even a path to the solution. As a member of the ICC/ANSI A117 Committee, I intend to introduce a new requirement for mainstreamed grab bar (and stanchion) installations provided for the general population based on my proposals for the IBC and the already-adopted requirements, I had proposed a few years ago, to NFPA 101 and 5000. As part of that effort, the whole issue of blocking—the projected benefits of it and where it needs to go—will be addressed.

(4) Also, in relation to A117.1, the A117 Committee is between cycles and has not met during the time frame of my bath/shower safety proposals to both NFPA and ICC. However, three leading members of the Committee, beyond myself have been consulted throughout the last few years on the evidential bases for, and content of, new requirements for mainstreaming grab bars and stanchions. This has also been done with a dedicated Task Group on Grab Bars that has been considering parallel proposals (one from me and an earlier one from another top expert on falls in Canada) for changes to the National Building Code of Canada (NBCC). ICC committee criticism of my not consulting with other bodies...
(more a matter of the IRC plumbing committee's criticism than the ICC Egress committee) is thus missing a lot of the collaboration with which I have approached this topic in recent years. (See my many video programs on bathroom safety posted at www.bldguse.com; they include a wide range of usability and safety professionals from both the USA and Canada.)

(5) Here I note the IRC Plumbing Committee's criticism that I had not worked with those involved with some plumbing standards committees whose work on the safety issues is not visible to me. Moreover, it is ironic that the IRC Plumbing Committee recommended that the issue of grab bars was not for the plumbing section of the IRC, but Chapter 3 on planning, something I can only pursue during 2019 within Group B hearings. This public comment on the IBC proposal is a precursor to a proposal for next year's Group B proposal for IRC's Chapter 3.

(6) Responding to the IBC Egress Committee Reason, the suggestion about restricting or prioritizing a requirement on grab bars to hotels misses the point that the vast majority of bath/shower-related injuries occur in non-hotel contexts. The suggestion also implies that too much faith is placed on the benefit, to safety, of being familiar with the bath/shower facility to reduce the risk of injurious falls. There is no good evidence supporting this and much evidence against it (just as the argument fails in relation to stairway safety). Here I need to disclose that, as an occupant of hotel guest rooms about 40 percent of the nights in a year, I would like to see all hotel rooms equipped with grab bars to the same extent as my home, My home installation, using stanchions, meets the proposed IBC requirements. No hotel I have stayed in around the world has provided safety to the level achievable with the proposed IBC requirements. Even the best of these hotels would get no better than a 40-percent grade in my experience, providing no more than 40 percent of what is now proposed for IBC Section 1209. A typical hotel installation, especially for the few hotel chains (including the largest) providing grab bars, consists of only a single grab bar serving either—not both—the in-tub bather or the shower taker. Research and experience show that each user group has different transfer needs; in-tub bathers need the vertical bar for stepping in and out (as do shower takers) but also need a second bar, positioned horizontally or diagonally, at the non-access side of the tub, to move into and out of a sitting position safely. Older, in-tub bathers will especially appreciate having bilateral support from the combination of (1) a non-access side grab bar and (2) an access side vertical grab bar, especially a stanchion mounted above or near the tub wall, about half-way along the tub wall length.

(7) Technical Issues Noted in the IBC Egress Committee Reason. The justifications for the "grab bar locations and lengths are based on the research literature, all listed in my proposal, especially the biomechanics studies performed over the last twenty years, largely in Canada. As these were done with bathtub entry and egress, I have augmented the findings with some observations of stanchion use in relation to human anthropometrics (ergonomics) where it is clear that people prefer to use vertical, conventional grab bars and stanchions at chest-to-eye height for best biomechanical advantage. Thus 60-inch to 63-inch top-end heights are specified for grab bar lengths when used in vertical orientation. Such heights, along with minimum lengths, are tempered by consideration of children's ergonomics, e.g., with handrails, a topic where I am a published authority based on decades of work. Vertical is the most effective orientation (according to extensive research with adult entry/exit of bathtubs used for showering).

(8) The Committee's question about how a vertical, conventional grab bar or stanchion relates to "shower/bathtub doors or curtains" has been considered extensively, especially in relation to the grab bar being placed where it is at least six inches from shower curtain rod fixing which is generally more or less over the front wall of the tub. This is also where fixed enclosures or doors are also generally located. The latter, doors, are either sliding or swinging and the latter sometimes swing both outward and inward. The Code cannot cover every detail and some intelligence should be exercised in the relatively extensive work required for enclosure installation to avoid interference between fixed and movable enclosure panels. Moreover, regarding the use of stanchions, such vertical grab bars can be located independent (structurally and spatially) of walls, for both tubs and showers; they can be positioned a few inches outside of enclosure panels and clear of any door swing and/or shower curtains. In addition to being very helpful in entry and egress from the facility the vertical stanchions provide a full-height backrest when standing on one foot and attempting to dry the other. (An example installation, shown in Figure 2 of my original proposal Reason Statement, utilizes the tub wall for a stanchion lower support.)

(9) The penultimate question in the Committee Reason asks about how the ends of the "vertical station" (sic), i.e., the stanchion is attached to the tub wall. It sits in a recess on the base plate (which is under a cover plate) which is held by industrial (automotive grade, for example) adhesive that can be removed with no damage to the tub wall but which, while held by the adhesive, has several times the shear area provided by conventional grab bar fixing with three screws at each end which are prone to corrosion and backing deterioration due to water entry into walls. The stanchion not only meets the load requirements, applied laterally in the test, of the ICC and NFPA codes (250 pounds) but the more stringent, higher-load requirements of the National Building Code of Canada (NBCC). At the ceiling, the vertical stanchion is also held with a small plate—matching the one on the tub wall) adhered to a solid ceiling. For other ceilings, this could be duplicated structurally, with a ceiling-mounted, nominal 1 by 6 piece of lumber, painted to match or complement the ceiling (e.g., a suspended ceiling) and distributing its almost exclusively horizontal load over many, many times the area of even the bottom fixing plate and also transmitting loads to the walls on either side of the typically small residential bathroom (60 inches across the short dimension based on a standard tub length).
(10) The bathroom installation shown in Figure 2 is in a rental apartment and no damaging hole is made in any wall or other surface holding both the vertical and horizontal stanchion elements in place to required strength standards of 250 pounds (or even 300 pounds in the case of the NBCC). In short the solution and answer to the Committee question is “Quite Easily Done” especially as many residential bathrooms have relatively low ceiling heights (by code) so that the vertical stanchion, resting on the tub wall only needs about a 66-inch length in the installation shown in Figure 2.

(11) The Committee’s final question, a compound one, is relatively easy to answer in that there are solutions, in provision of useful “points of control,” that are provided independent of the existence of walls or the size of the space. Taking “gang showers” first, it is assumed that such showers are designed with floor finishes that are slip resistant with water and soap contamination (to meet current IBC and NFPA requirements—the latter specifying “slip resistant under foreseeable conditions”). A single vertical, conventional grab bar or stanchion would meet the literal text proposed for the IBC, at the entry/egress point for the shower, presumably where there is a boundary between wet and dry conditions, e.g., a water dam or threshold to step over. Provision of additional points of control is beyond the proposed Code focus on safety of entry and egress.

(12) Regarding the second part to the Committee’s final question, about glass walls or no walls, any glass wall has to meet stringent load human impact load requirements. While perhaps being comparable to loads on a glass-mounted grab bar, this does not mean that attachment to a glass panel is the only solution. It is increasingly common in hotel (and maybe other) renovations, for a bathtub, bounded by three walls, to be replaced with a walk-in shower of the same plan dimensions and either a half-length, heavy glass panel, at the shower head end of the space or some combination of fixed, hinged, and/or sliding, heavy glass panel(s)—the latter generally being superior in stopping adjacent floors from getting wet and slippery. In the typical small guest room bathroom in a hotel, there will also be a water closet adjacent to the shower. A single stanchion placed outside of the shower enclosure and a few inches clear of any permanent or hinged panel opening, and mounted between floor and ceiling serves both shower and toilet users with a highly effective point of control for transfers to and from both facilities. Note that the need to provide some lateral support for the top of the fixed glass panel, even with suspended ceilings, can serve adequately to brace the top of the stanchion for the lateral loads typically imposed predominantly on such a point of control.

(13) Thus the renovation of either hotel or dwelling unit bathtubs with dedicated showers would not only trigger a need (at least per NFPA codes) for a new stanchion or conventional grab bar, it would facilitate its installation as the ceiling structure needed for lateral support of both the glass wall and the stanchion is best done at the same time. I have a growing library of photographs of the many hotel rooms now being seen in Europe and North America of this situation.

(14) Finally, with dwelling units (and future IRC changes), we will need to address freestanding bathtubs returning after decades of bathtubs being tied to walls. The proposed IBC requirements do not explicitly cover this, except for vertical stanchions on a bathtub’s access side. Other requirements are still tied to walls. So, as it is not a common issue in IBC installations, the topic of free-standing bathtubs is deferred to an IRC proposal in 2019. The creative skills of residential bathroom designers will have to be applied to making sure that such free-standing tubs are reasonably safe and usable by the majority of the population which is not only living longer but is losing mobility performance rapidly.

(15) Bottom line, my original proposal and the now to be relocated text in Section 1209, deal realistically with a major injury problem. Based on research evidence as well as extensive field experience I gain in my frequent international travel, this proposal is my small contribution to making the “International Codes” truly international in scope and justification. Proposal E1-2018, revised by this public comment, effectively addresses a major fall-injury problem costing tens of billions of dollars annually in societal injury costs in the US. Thank you to all making this possible in ICC’s code development process.

(16) Postscript about Reason Statement. I am leaving my original proposal Reason Statement untouched from what was submitted in January. This means that “poles” are still referred to in some places where, now, the preferred standard term is “stanchions,” for which a definition has been proposed for NFPA codes, as follows: “A fixed, generally upright bar or pole used as a support when grasped by a hand.” Stanchions have a long history in transportation vehicles, dating back a least as long as conventional grab bars.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The cost impact originally submitted with the proposal is unchanged by this public comment which simply moves the core of the requirement to a more-appropriate section and the cost impact topic apparently was not an explicit issue in the Committee reason for disapproval.


E2-18

IBC: 1003.4.1 (New), Chapter 35, (IFC[BE] 1003.4.1, Chapter 80)

Proposed Change as Submitted

Proponent: Bill Griese, Tile Council of North America, representing Tile Council of North America (bgriese@tileusa.com); Todd Scharich, American Society of Concrete Contractors, representing American Society of Concrete Contractors (TScharich@ASCCONLINE.ORG); Charles Muehlbauer, Natural Stone Institute, representing Natural Stone Institute (Charles@naturalstoneinstitute.org); Katelyn Simpson, representing TCNA Laboratory (ksimpson@tileusa.com); Jennifer Ann Faller, representing Concrete Polishing Council (CPC) (concreteinsite@gmail.com); Mark Fowler, representing National Terrazzo & Mosaic Association (mark@ntma.com)

2018 International Building Code

1003.4 Slip-resistant surface. Circulation paths of the means of egress shall have a slip-resistant surface and be securely attached.

Add new text as follows

1003.4.1 Hard surface flooring. Hard surface flooring shall be slip-resistant in accordance with ANSI A326.3.

Add new standard(s) follows

ANSI

A326.3-18:

Test Method for Measuring Dynamic Coefficient of Friction for Hard Surface Floor Materials

Reason: Currently, Section 1003.4 requires that circulation path surfaces of the means of egress be “slip-resistant” with no method of measurement, quantitative threshold, or general principles to help the specifier, end-user and code official. Given the Code’s lack of criteria for “slip-resistant,” materials are sometimes being inappropriately specified, and accidents occur in areas of the means of egress. This can be especially dangerous for emergency responders who are entering a building for the first time, potentially under conditions with water and limited visibility (smoke). The purpose of this revision is to provide slip resistance criteria for hard surface flooring used in interior circulation paths. The proposed reference standard, ANSI A326.3, sets forth a quantitative minimum threshold, means of measurement, and general principles regarding slip resistance for hard surface flooring and is widely specified for ceramic tile, polished concrete, terrazzo, and natural stone. This would provide clarity, safety, and transparency with no increased cost of construction.

This proposal is being submitted by Tile Council of North America (TCNA), Natural Stone Institute, American Society of Concrete Contractors (ASCC), Concrete Polishing Council (CPC), and National Terrazzo and Mosaic Association (NTMA), with the support of many other organizations.

Previously, slip resistance for ceramic tile was standardized solely by ANSI A137.1 American National Standard Specifications for Ceramic Tile. In 2012, a proposal (S222-12) was approved which removed ANSI A137.1 from Section 2103 of the Code (previously, Section 2103.6) in an effort to consolidate masonry-based specification references. An unintended consequence of this change was that the Code was subsequently left with no slip resistance criteria for ceramic tile, much less stone, terrazzo, or concrete.

In 2015, a proposal (E3-15) was made to reintroduce the slip resistance provisions of ANSI A137.1 into the Code. Given that these provisions were being widely adopted and specified for flooring types beyond just ceramic tile, the scope of the proposal included other hard surface flooring types with the support of each respective industry. The proposal was met with positive feedback from the Means of Egress Committee, but was ultimately disapproved since the proposed reference standard was limited to ceramic tile. At the time, the Committee encouraged the proponents to collaborate on a stand-alone slip resistance specification which covered all hard surface flooring types and return in 2018 with a proposal.
Today, this work has been done for all hard surface flooring and is standardized in ANSI A326.3, including in the standard test sample size and testing in as-is conditions or under cleaned conditions. This standard is widely understood for hard surface flooring and specified throughout the architectural community with hard surface manufacturers/suppliers/installers regularly providing the information needed by code officials as part of standard product submittals and information. Revising Section 1003.4 to reference ANSI A326.3 for hard surface flooring would clear-up ambiguity around the requirement for “slip-resistant” circulation path surfaces, facilitate increased safety and ease-of-specification, and codify the slip resistance standard which is most predominately used today for hard surface flooring.

ANSI ASC A108, the committee which developed ANSI A326.3, represents a broad range of stakeholders, including the Construction Specifications Institute (CSI), Natural Stone Institute, National Association of Homebuilders (NAHB), Underwriter Laboratories (UL), National Tile Contractors Association (NTCA), Tile Council of North America (TCNA), and 58 additional stakeholders (for a total of 64).

A copy of ANSI A326.3 has been attached to this proposal and is also easily accessible for free online via www.TCNAtile.com.

[Slip and Fall Study Report: Enhancing Floor Safety Through Slip Resistance Testing, Maintenance Protocols and Risk Awareness] [CNA Financial Corporation] [2017]

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Hard surface flooring that meets or exceeds the criteria of the ANSI A326.3 standard is not different in price from hard surface flooring that is below the threshold criteria.

Analysis: A review of the standard proposed for inclusion in the code, ANSI A326.3-18, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2018.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: The referenced standard contains proprietary testing equipment. While this test can be performed consistently in a laboratory, it does not seem to be useable for concrete surfaces poured in the field. There were concerns for who would do field inspection, what information should be on the box of products that had been tested, how this would work for sloped surfaces, what slip resistance would be acceptable. This is proposed for all hard surface floors – perhaps is should only be required for higher risk areas. (Vote: 12-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Bill Griese, representing Tile Council of North America (bgriese@tileusa.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1003.4.1 Hard-Interior hard surface flooring. Hard surface flooring, ceramic tile, terrazzo, natural stone, and polished concrete flooring used for circulation paths for the means of egress within the building shall be slip-resistant in accordance with ANSI A326.3. Conformance to ANSI A326.3 shall be indicated on product packaging, in product literature, on the construction documents, or by special inspection after flooring installation.

Commenter’s Reason: In response to points raised by the Committee as reasoning for disapproval, further clarification and/or proposed modifications are provided as follows:

To address committee reason #1 (claim that the referenced standard contains proprietary testing equipment):

- Suggestions of ANSI A326.3 test equipment propriety are misguided and should be disregarded. The specified device is not patented, its design specifications are not copyrighted, and it was developed based on globally collaborative research of well-understood concepts relating to human ambulation and DCOF.
- There is clear precedent within the Code regarding reference standards which acknowledge specific testing devices. For example, UL 723 and ASTM E84, commonly known as the 'Steiner Tunnel' tests for surface burning characteristics, are widely adopted, well-understood and oriented around a specific testing device.
- In fact, unlike the Steiner Tunnel for UL 723 and ASTM E84, the specified DCOF testing device for ANSI A326.3 is not exclusively requisite to the standard as provisions for device equivalency are clearly indicated within the criteria of the standard.

To address committee reason #2 (concern regarding mechanisms for conformance communication, especially where product packaging or literature has been discarded or where flooring is manufactured in situ, as is the case for terrazzo or polished concrete):

- The proposal has been modified to specify acceptable means of ANSI A326.3 conformance indication, including declaration on product packaging, within product literature, within project documentation or per special inspection.

To address committee reason #3 (concern regarding whether or not the referenced standard, which is intended for interior flooring, would be applicable to all hard surfaces, as well as all circulation paths of the means of egress, including exit discharges to public ways which could consist of non-interior circulation paths):

- The proposal has been modified to specify the hard surface flooring types which are applicable—ceramic tile, terrazzo, natural stone, and polished concrete. These are the four flooring types for which there is broad industry adoption of ANSI A326.3, and listing them more accurately captures the original intent of the proposal.
- Additionally, the proposal has been modified to limit the applicability of ANSI A326.3 to interior walking surfaces of the means of egress. Limiting this subsection of slip resistant circulation paths to building interiors facilitates better alignment with the referenced standard.
To address committee reason #4 (concern regarding how the referenced standard could be applicable to sloped surfaces):

- It should be understood that a minimum DCOF value is not appropriate for such applications. Safety on ramps is a function of the ramp angle, cautionary marking, and the expected activity.

This proposal is about safety, first and foremost. Though it doesn't address every type of flooring, circulation path, or means of egress scenario, it establishes clear thresholds where possible, which in turn is a step forward in the realm of safety. Its approval with these modifications would clear up a number of ambiguities pertaining to slip resistance and introduce a vastly improved way of specifying circulation paths, especially those involving flooring types for which slip resistance is of particular importance.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. Hard surface flooring that meets or exceeds ANSI A326.3 is not different in price from hard surface flooring that does not.
Proposed Change as Submitted

Proponent: Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@icc.org)

2018 International Building Code
Revise as follows

1006.2.2 Egress based on use. The numbers, types and locations of exits or access to exits shall be provided in the uses described in Sections 1006.2.2.1 through 1006.2.2.6.

Reason: The subsections of 1006.2.2 includes not only the number of exits and exit access doorways, but also requirements regarding the exit and exit access doors, types of exit access, and their locations. This provides clarity in the scoping of this section.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal is a clarification reminder of the scope of requirements included in the identified sections.
Public Hearing Results

Committee Action: As Submitted
Committee Reason: This addition provides clarity for the scoping of this section. (Vote: 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gregory Keith, representing The Boeing Company (grkeith@mac.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1006.2.2 Egress based on use. The numbers, configuration and types and locations of components of exits or access to exits shall be provided in the uses described in Sections 1006.2.2.1 through 1006.2.2.6.

Commenter’s Reason: The original proposal has merit, however the terminology in not consistent with Chapter 10 verbiage. Typically, Section 1006 addresses the required numbers of exits or exit access doorways. Section 1006.2.2 is titled Egress based on use and prescribes various means of egress design requirements for specified uses. The original proposal sought to clarify that fact. This public comment simply replaces some of the terminology with language typically used in Chapter 10. The word location has been replaced with the word configuration. Section 1007 deals with this issue and is titled Exit and exit access doorway configuration. This places the requirements in context and will assist in user comprehension. Also, the word types has been appropriately expanded to state types of components. Means of egress components are identified throughout Chapter 10 and several of these components are referenced in Section 1006.22. Approval of this public comment will provide more technically accurate verbiage thereby increasing user understanding and uniformity in the application of these provisions.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

The public comment is editorial and will not affect the cost of design or construction.
**Proposed Change as Submitted**

**PropONENT:** Jeffrey Shapiro, representing International Institute of Ammonia Refrigeration (jeff.shapiro@intlcodeconsultants.com)

THIS IS A TWO PART CODE CHANGE. PART I WILL BE HEARD BY THE MEANS OF EGRESS COMMITTEE. PART II WILL BE HEARD BY THE MECHANICAL CODE COMMITTEE. SEE THE TENTATIVE HEARING ORDER OF THESE COMMITTEES.

**2018 International Building Code**

**Revise as follows**

1006.2.2.2 Refrigeration machinery rooms. Machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two exits or exit access doorways. Where two exit access doorways are required, one such doorway is permitted to be served by a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room. All portions of machinery rooms shall be within 150 feet (45 720 mm) of an exit or exit access doorway. An increase in exit access travel distance is permitted in accordance with Section 1017.1.

Exit and exit access doorways shall swing in the direction of egress travel and shall be equipped with panic hardware, regardless of the occupant load served. Exit and exit access doorways shall be tight fitting and self-closing.

**Reason:** It is appropriate for refrigeration machinery rooms to have panic hardware on means of egress doors to protect occupants because of the risk of a rapid release of hazardous or asphyxiant gases. The need for rapid escape from refrigeration machinery rooms is not unlike what is needed for Group H Occupancies, which are required by Section 1010.1.10 to have panic hardware on all swinging doors. Likewise, IIAR 2 includes this requirement for ammonia refrigeration machinery rooms.

It is also recommended that this section be duplicated in the IMC to ensure that the requirements are not overlooked by machinery room designers. The requirement in the IBC is not readily found as a refrigeration machinery room requirement since it is isolated in the means of egress chapter.

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

For machinery rooms that would not already have been provided with panic hardware on means of egress doors, the requirement to have panic hardware will constitute an increased cost.
Public Hearing Results

Committee Action: As Submitted
Committee Reason: Adding panic hardware to refrigeration machinery rooms will improve safety for these rooms. There should be a public comment to add this to the list for panic hardware in Section 1010.1.10. (Vote: 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.10.1 Refrigeration machinery room. Swinging doors in refrigeration machinery rooms, where required by Section 1006.2.2.2, shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

Commenter's Reason: The formatting is to be consistent with E64-18 for panic hardware in electrical rooms. Panic hardware for electrical rooms in Section 1010.1.10 was moved into a new subsection. The new requirement for panic hardware in refrigeration machinery rooms should be addressed the same and included in Section 1010.10. This public comment is submitted by the ICC BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions there of. In 2017 and 2018 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes and public comments. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The modification is a pointer from the panic hardware section to the new section approved by the committee. The original proposal would add panic hardware in these spaces.

Public Comment 2:

Proponent: Timothy Pate, representing Colorado Chapter Code Change Committee (tpate@broomfield.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.10 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.4, Item 2.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.1.9.9 or 1010.1.9.10.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.
Refrigeration machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two exits or exit access doorways that swing in the direction of egress travel and are equipped with panic hardware or fire exit hardware.

Commenter's Reason: This proposed modification is to add a additional language in the code section that lists where you need panic hardware so code users will know that the requirement for panic hardware was added in the section for refrigeration machinery rooms.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This is to add language in separate section as a reminder of the new language in the original section.
Proposed Change as Submitted

Proponent: Jeffrey Shapiro, representing International Institute of Ammonia Refrigeration
(jeff.shapiro@intlcodeconsultants.com)

2018 International Mechanical Code
Add new text as follows

1105.10 [BE] Means of egress. Machinery rooms larger than 1,000 square feet (93 m²) shall have not less than two exits or exit access doorways. Where two exit access doorways are required, one such doorway is permitted to be served by a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room.

All portions of machinery rooms shall be within 150 feet (45 720 mm) of an exit or exit access doorway. An increase in exit access travel distance is permitted in accordance with Section 1017.1.

Exit and exit access doorways shall swing in the direction of egress travel and shall be equipped with panic hardware, regardless of the occupant load served. Exit and exit access doorways shall be tight fitting and self-closing.

Reason:

Cost Impact: The code change proposal will increase the cost of construction
Public Hearing Results

Committee Action: As Submitted

Committee Reason: Approval was based on the proponent's published reason statement. (Vote 11-0)

Assembly Action: None
**Proposed Change as Submitted**

**Proponent:** David Collins, representing The American Institute of Architects (dcollins@preview-group.com)

### 2018 International Building Code

#### SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS

**1006.1 General.** The number of exits or exit access doorways required within the means of egress system shall comply with the provisions of Section 1006.2 for spaces, including mezzanines, and Section 1006.3 for stories or occupied roofs.

**Revise as follows**

**1006.3 Egress from stories or occupied roofs.** The means of egress system serving any story or occupied roof shall be provided with the number of separate and distinct exits or access to exits based on the aggregate occupant load served in accordance with this section. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required number of exits or access to exits serving that story.

**Add new text as follows**

**1006.3.1 Occupant load.** Where stairways serve more than one story, or more than one story and an occupied roof, only the occupant load of each story or occupied roof, considered individually, shall be used in when calculating the required number of exits or access to exits serving that story.

**Revise as follows**

**1006.3.2-1006.3.3 Adjacent story. Path of egress travel.** The path of egress travel to an exit shall not pass through more than one adjacent story.

**Exception:** The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
3. Exit access stairways serving and ramps within an atrium comply with the provisions of Section 404.
4. Exit access stairways and ramps in open parking garages that serve only the parking garage.
5. Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.
6. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
7. Exterior exit access stairways and ramps between occupied roofs.

**1006.3.21006.3.3 Egress based on occupant load.** Each story and occupied roof shall have the minimum number of separate and distinct exits, or access to exits, as specified in Table 1006.3.2. A single exit or access to a single exit shall be permitted in accordance with Section 1006.3. The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupied roof shall be maintained until arrival at the exit discharge or a public way.

**1019.3 Occupancies other than Groups I-2 and I-3.** In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps that do not comply with one of the conditions listed in this section shall be enclosed with a shaft enclosure constructed in accordance with Section 713.
1. Exit access stairways and ramps that serve or atmospherically communicate between only two stories. Such interconnected stories shall not be open to other stories.

2. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit.

3. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed.

4. Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

5. Exit access stairways and ramps within an atrium complying with the provisions of Section 404.

6. Exit access stairways and ramps in open parking garages that serve only the parking garage.

7. Exit access stairways and ramps serving smoke-protected or open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.

8. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

9. Exterior exit access stairways or ramps between occupied roofs.

Reason: The title of this section includes stories and occupied roof, but the section gives no guidance regarding the occupied roof. This change will clarify the application of the provisions to an occupied roof and another story. As has been the practice, the occupant load of each story or with this change, the occupant load of the roof (which isn't a story) will be used to determine the required occupant load for the stair serving it.

In addition, the two exceptions will recognize an exit access stairway located in an atrium and an exit access stairway serving an occupied roof to pass through more than one story. This change will make it clear that a stair in an atrium that is NOT part of the means of egress is always acceptable and not limited to the one adjacent story criteria.

Cost Impact: The code change proposal will decrease the cost of construction. This change will simplify design decisions, review and approval of projects, reducing the cost of construction.
Committee Action: As Modified

Committee Modification: 1006.3.1 Occupant load. Where stairways serve more than one story, or more than one story and an occupied roof, only the occupant load of each story or occupied roof, considered individually, shall be used in when calculating the required number of exits or access to exits serving that story.

1006.3.2 Path of egress travel. The path of egress travel to an exit shall not pass through more than one adjacent story.

Exception: The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

- In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
- Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
- Exit access stairways and ramps within an atrium comply with the provisions of Section 404.
- Exit access stairways and ramps in open parking garages that serve only the parking garage.
- Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.
- Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
- Exterior Exit access stairways and ramps between serving occupied roofs.

1019.3 Occupancies other than Groups I-2 and I-3.

In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps that do not comply with one of the conditions listed in this section shall be enclosed with a shaft enclosure constructed in accordance with Section 713.

1. Exit access stairways and ramps that serve or atmospherically communicate between only two stories. Such interconnected stories shall not be open to other stories.

2. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit.

3. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed.

4. Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

5. Exit access stairways and ramps within an atrium complying with the provisions of Section 404.

6. Exit access stairways and ramps in open parking garages that serve only the parking garage.

7. Exit access stairways and ramps serving smoke-protected or open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.

8. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

9. Exterior Exit access stairways or ramps between serving occupied roofs.

Committee Reason: The modification to Section 1006.3.1 is an editorial correction for better English. The modification to Section 1006.3.2 will allow for the exit access stairways to move down from the occupied roof and into the building for means of egress from the roof. As a new exception, the exit access travel distance, not the number of stories, will be the limiting factor. Without the modification, Section 1006.3.2 Exception 7 would only be applicable if there were multiple roofs and it would limit the application to exterior exit access stairways.

This proposal separates out occupied roofs into a new Section 1006.3.1 which will clarify how egress is addressed for occupied roofs. There was no discussion on the new Exception 3 for Section 1006.3.2. (Vote: 9-5)
Individual Consideration Agenda

Public Comment 1:

Proponent: Lee Kranz, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS

1006.1 General. The number of exits or exit access doorways required within the means of egress system shall comply with the provisions of Section 1006.2 for spaces, including mezzanines, and Section 1006.3 for stories or occupied roofs.

1006.3 Egress from stories or occupied roofs. The means of egress system serving any story or occupied roof shall be provided with the number of separate and distinct exits or access to exits based on the aggregate occupant load served in accordance with this section.

1006.3.1 Occupant load. Where stairways serve more than one story, or more than one story and an occupied roof, only the occupant load of each story or occupied roof, considered individually, shall be used when calculating the required number of exits or access to exits serving that story.

1006.3.2 Path of egress travel.. The path of egress travel to an exit shall not pass through more than one adjacent story.

Exception: The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
3. Exit access stairways and ramps within an atrium comply with the provisions of Section 404.
4. Exit access stairways and ramps in open parking garages that serve only the parking garage.
5. Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.
6. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
7. Exit access stairways and ramps serving occupied roofs.

1006.3.3 Egress based on occupant load. Each story and occupied roof shall have the minimum number of separate and distinct exits, or access to exits, as specified in Table 1006.3.2. A single exit or access to a single exit shall be permitted in accordance with Section 1006.3.3. The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupied roof shall be maintained until arrival at the exit discharge or a public way.

1019.3 Occupancies other than Groups I-2 and I-3. In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps that do not comply with one of the conditions listed in this section shall be enclosed with a shaft enclosure constructed in accordance with Section 713.
1. *Exit access stairways and ramps* that serve or atmospherically communicate between only two stories. Such interconnected stories shall not be open to other stories.

2. In Group R-1, R-2 or R-3 occupancies, *exit access stairways and ramps* connecting four stories or less serving and contained within an individual *dwelling unit or sleeping unit* or *live/work unit*.

3. *Exit access stairways* serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed.

4. *Exit access stairways and ramps* in buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the *stairway or ramp* and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

5. *Exit access stairways and ramps* within an *atrium* complying with the provisions of Section 404.

6. *Exit access stairways and ramps* in *open parking garages* that serve only the parking garage.

7. *Exit access stairways and ramps* serving *smoke-protected* or *open-air assembly seating* complying with the exit *access travel distance requirements of Section 1029.7*.

8. *Exit access stairways and ramps* between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, *places of religious worship*, auditoriums and sports facilities.

9. *Exit access stairways or ramps* serving *occupied roofs*.

**Commenter’s Reason:** We have no objection to the new Exception 3 in Section 1006.3.2, and we agree with the grammatical edit to Section 1006.3.1. This public comment preserves those two features of the original code change proposal. However, we do not agree with the as-modified version of 1006.3.2.

The floor modification to Section 1006.3.2, changing “exterior exit access stairways or ramps between occupied roofs” to “exit access stairways and ramps serving occupied roofs” [our emphasis] is flawed as it overly-broadened the scope of the original exception, and violated the intent of the charging language in 1006.3.2.

Section 1006.3.2 (in the new numbering scheme) essentially requires two enclosed exits be available in the adjacent story below, if a story is using an exit access stairway as its second means of egress. This principle has been debated in several cycles, and has been upheld by the membership despite several attempts to delete the requirement.

The as-modified exception will allow an occupied roof to be served only by one vertical exit enclosure, along with an unenclosed exit access stairway. For an office building, the unenclosed exit access stairway can pass through an unlimited number of stories. (An unlimited open exit access stairway is allowed in an M Occupancy, but a roof deck is not likely.) In the vast majority of cases, it is unlikely the exit travel distance down the unenclosed exit access stairway will be limited because exit travel distance is measured to the nearest exit—which will likely be the vertical exit enclosure.

Should this exception survive in the as-modified form, the next logical step would be deletion of the entire section in the next cycle. If an unoccupied roof is allowed to have one enclosed stair and one unenclosed stair as its means of egress, why require two enclosed stairs for any story? We believe this is a dangerous precedent to set, and ask for the membership’s support in preventing any erosion of the principle stated above.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

Corrects an egress issue created by a floor modification. There should be no impact on the cost of construction from the original proposal.

**Public Comment 2:**

**Proponent:** David Collins, representing The American Institute of Architects (dcollins@preview-group.com) requests As Submitted.

**Commenter’s Reason:** As originally submitted I was simply trying to clarify in Sections 1006.3.2, exception 7 that if there were more than one occupied roof on a building that an exterior exit access stairways could be used for exit access off the roof(s). The modification, while originally seeming to be simple, complicated the exception by allowing the exit access stair from a roof to go any number of stories down through the building and not be limited by the “one adjacent story” limitation in the charging language since this is an exception.

That was not my intent and I do not believe it should be a part of this code change. Therefore I ask that the membership disapprove the change As Modified and instead approve it As Submitted.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

By not accepting the modification, the cost of construction will not be affected.
Public Comment 3:

Proponent: Jonathan Siu, City of Seattle Department of Construction and Inspections, representing City of Seattle Department of Construction and Inspections (jon.siu@seattle.gov) requests As Submitted.

Commenter’s Reason: This public comment requests the proposal be returned to its originally-proposed text. Our main concern relates to the changes made by the Means of Egress Committee in Exception 7 to 1006.3.2 and Exception 9 to Section 1019.3. We fully support all of the language the proponent originally submitted. We do not support the Committee-approved floor modification submitted at the Committee Action Hearings in Columbus.

Once we had a chance to fully evaluate the effects of the modification introduced on the floor in Columbus and subsequently approved by the Committee, it became obvious to us that the modified text in the exceptions is not in keeping with the intent of the charging language in Section 1006.3.2, and sets a dangerous precedent.

The charging language in Section 1006.3.2 (using the numbering system proposed by this code change proposal) was originally introduced to prevent situations shown in Figure 1 below. This figure illustrates a multi-story building that has one (enclosed) interior exit stair and one (unenclosed) exit access stairway. Prior to the introduction of the code text in 1006.3.2, the code would have allowed this situation in a B or M occupancy. (Recall that in a B or M Occupancy, an unenclosed exit access stairway is not limited in height.)

Section 1006.3.2 essentially requires a path of egress to transition from an unenclosed exit access stairway to an interior exit stair within one story. Note that this principle of transitioning from an unenclosed exit access stairway to an (enclosed) interior exit stair in the adjacent story below was cited in the reason statement for Code Change Proposal E27-15, and was upheld by the Means of Egress Committee in Columbus in their disapproval of Code Change Proposal E20-18 by a 14-0 vote. The reason they gave for disapproval was, “The exceptions that permit the travel on exit access stairways to go more than one story were carefully considered. This should not be extended to stairways with draft curtains or atriums. This is too great of an opportunity for smoke migration within high rise buildings.”
However, this proposal with the floor modification approved by the Committee would allow a similar, dangerous situation for a roof deck, as shown in Figure 2. This figure depicts a multi-story building with an occupied roof. All stories have access to the two interior exit stairs. The occupied roof is served by an interior exit stair (on the right), and an unenclosed exit access stairway. Because the modification introduced on the floor at the Committee Action Hearings in Columbus exempts stairs serving an occupied roof from the shall not pass through more than one adjacent story restriction, this means that the unenclosed exit access stairway is not required to transition to the enclosed exit stair on the left of the figure at the uppermost story. That is, the exit access stair could be isolated from the second enclosed exit stair. This is a dangerous precedent to set, as one could argue if an unenclosed exit access stairway of unlimited height (in a B or M occupancy) is allowed to be the second means of egress for an occupied roof, why should there be any restriction on using the same arrangement for a story?

This is not a hypothetical issue, as we in Seattle have recently seen several applications for high rise office building tenants sporting unenclosed convenience stairs extending as many as 10 or 12 stories through the building. In those buildings, it can easily be conceived that the convenience stairs would become the only second means of egress for all the stories they serve. Extending the concept of unenclosed stairs serving an occupied roof to these stories would be done in a heartbeat, if this as-modified proposal were to survive.

This public comment returns to the originally proposed text of Section 1006.3.2, Exception 7, and Section 1019.3, Exception 9, and keeps them in alignment. We believe the proponent of the original code change had a legitimate issue that is addressed with his proposed language. There are cases of buildings with multiple roof levels with roof decks (Figure 3), or roofs with multiple levels of roof decks (Figure 4) where an exterior stair connecting the occupied roofs need not count toward the one adjacent story, as smoke will not accumulate at those levels.
Fig. 3 - E18-18 As Submitted – Decks on Different Roof Levels
We urge the ICC Governmental Voting Representatives to continue your support of the current requirements, and support this proposal As Submitted (AS). The current As Modified (AM) status cannot be allowed to carry into the 2021 IBC.

**Cost Impact:** The net effect of the public comment and code change proposal will decrease the cost of construction. Since this public comment returns the substantive portions of the proposal to its As Submitted status, the cost impact statement is unchanged from the statement submitted with the original code change proposal: “This change will simplify design decisions, review and approval of projects, reducing the cost of construction.”
**Proposed Change as Submitted**

**Proponent:** Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

2018 International Building Code

1006.3 Egress from stories or occupied roofs. The means of egress system serving any story or occupied roof shall be provided with the number of separate and distinct exits or access to exits based on the aggregate occupant load served in accordance with this section. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required number of exits or access to exits serving that story.

Delete without substitution

1006.3.1 Adjacent story. The path of egress travel to an exit shall not pass through more than one adjacent story.

**Exception:** The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
3. Exit access stairways and ramps in open parking garages that serve only the parking garage.
4. Exit access stairways and ramps serving open air assembly seating complying with the exit access travel distance requirements of Section 1029.7.
5. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

**Reason:** The current list of exceptions allows for exit access stairways within 5 of the 8 options to use travel distance without a story limitation (individual dwelling units (#2), Group R-3 and R-4 congregate residences(#3), open parking garages(#6), open air seating(#7) and balconies(#8)). The 3 options currently limited to one story are the 2 story configuration (#1), water curtains around stairways opening (#4) and atriums(#5). These exceptions were added to the code by E27-15.

Travel distance, rather than stories should be the controlling factor. There would be no impact on two story configurations. Deletion of the requirement would allow for exit access travel distance to be measured down the open exit access stairway, regardless of the number of stories. This would now include open exit access stairways that use water curtains around stairways opening (#4) and atriums with smoke protection (#5). With the removal of the limitation for one story, none of the exceptions are needed.

This would be consistent with the BCAC proposal to revise measurement for travel distance along open exit access stairways in atriums.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

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

This will reduce the cost in those situations where an enclosure would have been required for the stairway in buildings with more than two stories.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: The exceptions that permit the travel on exit access stairways to go more than one story were carefully considered. This should not be extended to stairways with draft curtains or atriums. This is too great of an opportunity for smoke migration within high rise buildings. (Vote: 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Sarah Rice, representing Himself (srice@preview-group.com); Stephen Thomas, Colorado Code Consulting, LLC (sthomas@coloradocode.net); Wayne Jewell (wayne.jewell@greenoaktwp.com) requests As Modified by This Public Comment.

Replace as follows:

2018 International Building Code

1006.3.1 Adjacent story. The path of egress travel to an exit shall not pass through more than one adjacent story.

Exceptions:

1. The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

   1.1 In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
   1.2 Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
   1.3 Exit access stairways in open parking garages that serve only the parking garage.
   1.4 Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.
   1.5 Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

2. The path of egress travel shall be permitted to pass through not more than three stories where not less than two exits can be entered within the exit access travel distances specified in Section 1017.

Commenter's Reason: The one story limitation for egress to an exit via an exit access stair/ramp was introduced in the 2012 IBC via Code Change ES-09/10, from the ICC Code Technology Committee. As the concept of allowing access to another exit via an exit access stair was previously limited to 2 stories in the 2009 IBC, it was consistent to incorporate that limitation. But as communities have fully embraced and adopted the 2012, 2015 and now the 2018 IBC and the design community is looking to utilize this design option, the constraints of trying to fully use the 1-story limitation are becoming visible. This is confirmed by the submittal of the code change itself - in that it has been brought forth by the ICC Building Code Action Committee (BCAC) which is comprised of a very knowledgeable group of enforcement officials, industry representatives and code uses.

We the proponents agree with the BCAC that the 1-story limitation is too restrictive, but we feel that not having a limitation is too extreme. Our proposed modification seeks to allow the use of exit access stairs/ramps to access an exit on another story with 1) a three (3) story limit, and 2) a requirement that at least 2 exits be located within the exit access travel distances specified in Section 1017.

We reviewed the code related provisions to the location of exits (i.e., exit access travel distance), the enclosure of exits (i.e., fire rating) and for the protection methods required of exit access stairs in Section 1019.1 (i.e., configuration limits, draft curtains and closely spaced sprinklers). As the overarching requirement associated with the means of egress for a building is that an occupant can get to a protected location in the exit access travel distances in Section 1017, we examined how it can be complied with when both a horizontal and vertical path is available. We feel that the protection
method afforded a 3-story exit access stair using Item 4 in Section 1019.1 combined with the mandate that an occupant must be able to reach a minimum of 2 exits within the exit access travel distance specified in Section 1017 affords the intended safety to the building occupants and ask that you support this modification.

**Cost Impact:** The net effect of the public comment and code change proposal will decrease the cost of construction. The implementation of the concept outlined in this proposal will not increase the cost of construction, but may decrease the cost of construction.
Proposed Change as Submitted

Proponent: Gregory Keith, representing The Boeing Company (grkeith@mac.com); Douglas Evans, representing DHE FPE LLC (dhefpe@gmail.com)

2018 International Building Code
Delete and substitute as follows

1006.3.1 Adjacent story. The path of egress travel to an exit shall not pass through more than one adjacent story.

Exception: The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
3. Exit access stairways and ramps in open parking garages that serve only the parking garage.
4. Exit access stairways and ramps serving open-air assembly seating complying with the exit access travel distance requirements of Section 1029.7.
5. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.

1006.3.1 Access to exits at other levels. In other than Group I-2 and I-3 occupancies, access to exits at other building levels utilizing unenclosed exit access stairways and ramps shall be permitted. Such exit access stairways and ramps shall comply with one or more of the conditions listed in Section 1019.3. Regardless of the number of stories permitted to be served by the unenclosed exit access stairway or ramp, the exit access travel distance to the entrance to an exit shall not exceed the limitations set forth in Section 1017.2.

Reason:
This was the original intent of the ICC Code Technology Committee proposal E5-09/10 that was approved for the 2015 edition of the IBC. The logic was to allow the long established vertical opening exceptions to stand on their own merit. If these specific conditions have been deemed to provide acceptable fire migration limits, it stands to reason that exit access travel distance may occur within those tenable environments.

However, a separate proposal overlaid the E5 provisions in Section 1006.3 by limiting path of egress travel to an exit only from an adjacent level. This effectively rendered the CTC methodology as moot.

Realizing that the single adjacent story provision was overly restrictive and did not recognize former exit access provisions, five exceptions to the adjacent story requirement were created for the 2018 edition based on the conditions contained in Section 1019.3. Inexplicably, only five of the eight conditions were referenced.

This proposal completes the correction by eliminating the base restriction and the five accompanying exceptions. In doing so, it returns to the original CTC methodology and recognizes all empirical Section 1019.3 fire migration scenarios that have been contained in the IBC and legacy codes for decades. Additionally, it describes the procedure for determining how to access exits at other stories by way of exit access stairways or ramps. Approval of this proposal will allow for the more flexible design of the exit access portion of the means of egress system and achieve more consistent interpretations of the provision.

Cost Impact: The code change proposal will decrease the cost of construction
The proposal will allow for access to exits by unenclosed exit access stairways in atriums and buildings with specifically protected vertical openings

Staff Note: Section 1006.3.1 was added to the 2018 IBC by code proposal E27-15.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: The exceptions that permit the travel on exit access stairways to go more than one story were carefully considered. This should not be extended to stairways with draft curtains or atriums as permitted in Section 1019. This is too great of an opportunity for smoke migration within high rise buildings. The additional language adds no additional information. Disapproval would be consistent with the committee action on E20. (Vote: 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gregory Keith, representing DHE FPE LLC (grkeith@mac.com); Douglas Harold Evans, DHE FPE LLC, representing DHE FPE LLC (dhefpe@gmail.com) requests As Submitted.

Commenter’s Reason: Item E21-18 was intended to clarify provisions for access to exits at other levels and to make those provisions consistent with Section 1019.3 that permits unenclosed exit access stairways and ramps. The committee disapproved the proposal citing that Section 1019.3, Conditions 4 and 5 were potentially unsafe. In the committee’s reason statement they noted that, “This should not be extended to stairways with draft curtains or atriums as permitted in Section 1019. This is too great of an opportunity for smoke migration in high rise buildings.” The fact of the matter is that all of the conditions listed in Section 1019.3 have been long recognized as providing acceptable levels of control of smoke migration. Indeed, Conditions 4 and 5 were provisions that were permitted by all of the legacy codes for numerous decades. To now arbitrarily question their efficacy is inappropriate. There has been no life loss history resulting from the design conditions in question. Additionally, the committee should be reminded that the proposal limits occupant exposure within those areas based on the allowable travel distance. Regardless of the smoke migration potential, a given occupant will be limited to less than two minutes of travel time based on the permitted exit access travel distance. The committee thinking is also inconsistent in that they regard access to an exit within an atrium as a risk, yet at Item E96-18 they voted to retain Exception 2 to Section 1023.2 which permits an unenclosed stairway within an atrium (high rise or otherwise) to serve as a formal exit.

The concept of accessing exits at other building levels by way of exit access stairways was formalized in the International Code Council, Code Technology Committee’s proposal E5-09/10. That proposal recognized that there were a number of currently permitted design conditions that allowed for vertical openings greater than a simple adjacent story. All of the conditions cited at Section 1019.3 are frequently utilized in building design and have been empirically validated for decades. The premise of the CTC Means of Egress Committee was that if a given opening was currently permitted based on fire and smoke migration concerns, it should be safe to allow for exit access travel in such areas within applicable exit access travel distance limitations.

The ICC Building Code Action Committee agrees with this approach. They submitted two proposals (E19-18 and E20-18) which accomplished essentially the same technical end as E21-18. The committee disapproved both of those proposals citing the same smoke development concerns. This public comment supports Item E21-18. E21 is preferred because it states the prescribed design conditions associated with the use of exit access stairways to access exits at other building levels so as to enhance user comprehension and uniformity of application. Included is the requirement that such exit access stairway or ramp meets one of the specific conditions detailed at Section 1019.3. Also, it stipulates that exit access travel on such stairways or ramps shall not exceed the limitations of Section 1017.2.

This concept has been well studied and supported by the ICC CTC and BCAC for almost a decade. This public comment will cause that vision to finally become reality. The lack of pertinent life loss history indicates that access to exits at other building levels in accordance with this public comment will be safe for building occupants.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction. This proposal will allow for access to exits by unenclosed exit access stairways and ramps in atriums and buildings with specifically protected vertical openings.
**Proposed Change as Submitted**

**Proponent:** Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@icc.org)

2018 International Building Code
Revise as follows

**SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS**

**1006.3 Egress from stories or occupied roofs.** The means of egress system serving any story or occupied roof shall be provided with the number of separate and distinct exits or access to exits based on the aggregate occupant load served in accordance with this section. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required number of exits or access to exits serving that story.

**1006.3.2 Egress based on occupant load.** Each story and occupied roof shall have the minimum number of separate and distinct exits, or access to exits, as specified in Table 1006.3.2. A single exit or access to a single exit shall be permitted in accordance with Section 1006.3.3. The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupied roof shall be maintained until arrival at the exit discharge or a public way.

**TABLE 1006.3.2**

<table>
<thead>
<tr>
<th>OCCUPIED LOAD PER STORY</th>
<th>MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS FROM PER STORY OR OCCUPIED ROOF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-500</td>
<td>2</td>
</tr>
<tr>
<td>501-1,000</td>
<td>3</td>
</tr>
<tr>
<td>More than 1,000</td>
<td>4</td>
</tr>
</tbody>
</table>

**1006.3.3 Single exits.** A single exit or access to a single exit shall be permitted from any story or occupied roof where one of the following conditions exists:

1. The occupant load, number of dwelling units and common path of egress travel distance do not exceed the values in Table 1006.3.3(1) or 1006.3.3(2).
2. Rooms, areas and spaces complying with Section 1006.2.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit or access to a single exit.
3. Parking garages where vehicles are mechanically parked shall be permitted to have one exit or access to a single exit.
4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit.
5. Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met:
   5.1. The dwelling unit complies with Section 1006.2.1 as a space with one means of egress.
   5.2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.
### TABLE 1006.3.3(1)
STORIES AND OCCUPIED ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES

<table>
<thead>
<tr>
<th>STORY AND OCCUPIED ROOF</th>
<th>OCCUPANCY</th>
<th>MAXIMUM NUMBER OF DWELLING UNITS</th>
<th>MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basement, first, second or third story above grade plane</td>
<td>R-2&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>4 dwelling units</td>
<td>125 feet</td>
</tr>
<tr>
<td>Occupied roof over the first, second or third story above grade plane</td>
<td>R-2&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>NA</td>
<td>125 feet</td>
</tr>
<tr>
<td>Fourth story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.

b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).

### TABLE 1006.3.3(2)
STORIES AND OCCUPIED ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES

<table>
<thead>
<tr>
<th>STORY AND OCCUPIED ROOF</th>
<th>OCCUPANCY</th>
<th>MAXIMUM OCCUPANT LOAD PER STORY AND OCCUPIED ROOF</th>
<th>MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First story above or below grade plane and occupied roofs over the first story above grade plane</td>
<td>A, B&lt;sup&gt;b&lt;/sup&gt;, E&lt;sup&gt;f,b&lt;/sup&gt;, M, U</td>
<td>49</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>H-2, H-3</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>H-4, H-5, I, R-1, R-2&lt;sup&gt;a,c&lt;/sup&gt;</td>
<td>10</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>S&lt;sup&gt;b,d&lt;/sup&gt;</td>
<td>29</td>
<td>75</td>
</tr>
<tr>
<td>Second story above grade plane and occupied roof over the second story above grade plane</td>
<td>B, F, M, S&lt;sup&gt;d&lt;/sup&gt;</td>
<td>29</td>
<td>75</td>
</tr>
<tr>
<td>Third story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.

b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or on the roof of such buildings shall have a maximum exit access travel distance of 100 feet.

c. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(1).

d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.
**Reason:** This is part of a series of 3 proposals dealing with occupied roofs. See BCAC proposals to the definition of penthouse and Section 1009.
The change to the title and heading in Table 1006.3.2 is for consistency with the text.

The proposed modifications to Section 1006 includes adding 'occupied roofs' to Table 1006.3.3(1) to clarify the conditions in which one exit or access to one exit is allowed for Group R-2 occupancies. The tables are modified to clarify that the occupied roofs are allowed 'over the allowable stories.'

Similarly this proposal adds 'occupied roofs' to Table 1006.3.3(2) to clarify the conditions in which one exit or access to one exit is allowed for the other occupancies. The table was also modified to clarify that the occupied roofs are allowed 'over the allowable stories.' A proposed modification to footnote b of the table clarifies that the allowable increase in exit access travel distance from 75 feet to 100 feet for properly sprinklered Group B, F and S occupancies also includes the roof area for these uses.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction
This proposal provides clarification to a subject that was not previously addressed. The changes to the single occupant tables could allow for one exit stairway from an occupied roof instead of two.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: Where an occupied roof can have a single exit is an issue that needs to be addressed, however, in Table 1006.3.3(1) and 1006.3.3(2) the proposal would allow a single exit roof over what was previously allowed as a single exit story. The roof should be treated as a story and limited as such for a single exit - match the current allowed height rather than exceed the current height limits. (Vote: 9-5)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@iccinfo.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

<table>
<thead>
<tr>
<th>STORY AND OCCUPIED ROOF</th>
<th>OCCUPANCY</th>
<th>MAXIMUM NUMBER OF DWELLING UNITS</th>
<th>MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basement, first, or second or third story above grade plane</td>
<td>R-2 a, b</td>
<td>4 dwelling units</td>
<td>125 feet</td>
</tr>
<tr>
<td>Occupied roof over the first, second or third story above grade plane</td>
<td>R-2 a, b</td>
<td>NA</td>
<td>125 feet</td>
</tr>
<tr>
<td>Fourth story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Occupied roof over third story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

For SI:
1 foot = 3048 mm.

NP = Not Permitted.
NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).
TABLE 1006.3.3(2)
STORIES AND OCCUPIED ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES

<table>
<thead>
<tr>
<th>STORY AND OCCUPIED ROOF</th>
<th>OCCUPANCY</th>
<th>MAXIMUM OCCUPANT</th>
<th>LOAD PER STORY AND OCCUPIED ROOF</th>
</tr>
</thead>
<tbody>
<tr>
<td>First story above or below grade plane and occupied roofs over the first story above grade plane</td>
<td>A, B&lt;sup&gt;b&lt;/sup&gt;, E&lt;sup&gt;b&lt;/sup&gt;, F&lt;sup&gt;b&lt;/sup&gt;, M, U</td>
<td>49</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>H-2, H-3</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>H-4, H-5, I, R-1, R-2&lt;sup&gt;a&lt;/sup&gt;, c</td>
<td>10</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>S&lt;sup&gt;b&lt;/sup&gt;, d</td>
<td>29</td>
<td>75</td>
</tr>
<tr>
<td>Second story above grade plane and occupied roof over the second story above grade plane</td>
<td>B, F, M, S&lt;sup&gt;d&lt;/sup&gt;</td>
<td>29</td>
<td>75</td>
</tr>
<tr>
<td>Third story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

For SI:
1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or on the occupied roof of such buildings shall have a maximum exit access travel distance of 100 feet.
c. This table is used for R-2 occupancies consisting of sleeping units. For R-2 occupancies consisting of dwelling units, use Table 1006.3.3(1).
d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

Commenter’s Reason: Per Section 1006.3, and occupied roof is treated as a story for purposes of means of egress. The change to Table 1006.3.2 is needed for consistency with that text. The revisions for the single exit tables is to clarify where a single exit is permitted from an occupied roof. The original proposal allowed for a single exit roof over any single exit story. The modification would allow for a single exit roof above a single story building since that is the same vertical travel distance as permitted for a basement. The upper limit for two and three story buildings has been revised to only allow for a single exit roof at the same height as currently permitted for a single exit story. The revisions to the footnotes under Table 1006.3.3(2) is for consistent language.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction. This proposal provides clarification to a subject that was not previously addressed. The changes to the single occupant tables could allow for one exit stairway from an occupied roof instead of two.

E22-18
Proposed Change as Submitted

Proponent: Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

2018 International Building Code
Revise as follows

1006.3.3 Single exits. A single exit or access to a single exit shall be permitted from any story or occupied roof where one of the following conditions exists:

1. The occupant load, number of dwelling units and common path of egress exit access travel distance do not exceed the values in Table 1006.3.3(1) or 1006.3.3(2).
2. Rooms, areas and spaces complying with Section 1006.2.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit or access to a single exit.
3. Parking garages where vehicles are mechanically parked shall be permitted to have one exit or access to a single exit.
4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit.
5. Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met:

   5.1. The dwelling unit complies with Section 1006.2.1 as a space with one means of egress.
   5.2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.

<table>
<thead>
<tr>
<th>STORY</th>
<th>OCCUPANCY</th>
<th>MAXIMUM NUMBER OF DWELLING UNITS</th>
<th>MAXIMUM COMMON PATH OF EGRESS EXIT ACCESS TRAVEL DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basement, first, second or third story above grade plane</td>
<td>R-2a, b</td>
<td>4 dwelling units</td>
<td>125 feet</td>
</tr>
<tr>
<td>Fourth story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

For SI: 1 foot = 3048 mm.

NP = Not Permitted.

NA = Not Applicable.

   a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.
   b. This table is used for R-2 occupancies consisting of dwelling units. For R-2 occupancies consisting of sleeping units, use Table 1006.3.3(2).
TABLE 1006.3.3(2)
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES

<table>
<thead>
<tr>
<th>STORY</th>
<th>OCCUPANCY</th>
<th>MAXIMUM OCCUPANT LOAD PER STORY</th>
<th>MAXIMUM COMMON-PATH-OF-EGRESS EXIT ACCESS TRAVEL DISTANCE (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First story above or below grade plane</td>
<td>A, B(^b), E F(^b), M, U</td>
<td>49</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>H-2, H-3</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>H-4, H-5, I, R-1, R-2(^a), c</td>
<td>10</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>S(^b), d</td>
<td>29</td>
<td>75</td>
</tr>
<tr>
<td>Second story above grade plane</td>
<td>B, F, M, S(^d)</td>
<td>29</td>
<td>75</td>
</tr>
<tr>
<td>Third story above grade plane and higher</td>
<td>NP</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

NA = Not Applicable.

a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1030.

b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall have a maximum exit access travel distance of 100 feet.

c. This table is used for R-2 occupancies consisting of sleeping units. For R-2 occupancies consisting of dwelling units, use Table 1006.3.3(1).

d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

Reason: There is a conflict in terminology used for single exit criteria for stories/buildings in the IBC Section/Tables 1006.3.3 and IEBC Section/Tables 805.3.1.1. The intent of this proposal is a clarification, without technical revisions. Below is the definition for common path of egress travel and exit access and a graphic from the IBC commentary illustrating the terms. Single exit stories/buildings cannot have a common path of egress travel since two exits are not required. The correct term is “exit access travel distance”. This would match the terminology in the column headings for single exit tables with the footnotes for the single exit tables in the IBC and the table heading and footnotes in the IEBC.

If you look at the history for the single exit tables, until the reorganization that combined single exit spaces and stories, the term used was ‘exit access travel distance.’

With the text incorrectly used in IBC Section 1006.3.3, it could be interpreted that the travel distance has to be to a place where there are two exits – which is on the ground floor - regardless if the stairway is an exit access or exit stairway. Exit access travel distance should stop at the door to the exit stairway.

COMMON PATH OF EGRESS TRAVEL. That portion of the exit access travel distance measured from the most remote point within a story to that point where the occupants have separate access to two exits or exit access doorways.

EXIT ACCESS. That portion of a means of egress system that leads from any occupied portion of a building or structure to an exit.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.
Cost Impact: The code change proposal will not increase or decrease the cost of construction. As the proposal essentially provides clarification to a subject that has created confusion.
Committee Action: As Submitted

Committee Reason: This is a good clarification for a point that has been confusing users of the codes. “Common path of travel” is not the correct term for single exit conditions – it is for two exit conditions. “Exit access” is the correct term for single exit buildings and stories. This will coordinate the terminology in the table with the current footnotes and similar sections in the IEBC. (Vote: 11-3)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gregory Keith, representing The Boeing Company (grkeith@mac.com) requests Disapprove.

Commenter’s Reason: IBC common path of egress travel provisions have evolved over many code development cycles. Those provisions are currently comprehensive, understandable and uniformly applied. E24-18 which was approved by a vote of 11-3 represents a technical departure from current provisions. In the published reason statement justifying approval, the committee stated, "This is a good clarification for a point that has been confusing users of the codes." Perceived confusion results when current requirements are compared to former legacy code provisions. The reason statement continues, "Common path of travel is not the correct term for single exit conditions--it is for two exit conditions. Exit access is the correct term for single exit buildings and stories."

Presently, Section 1006.3.3 text and tables reference common path of egress travel as a qualifying criterion for the determination of multi-exit stories. Section 1006.3.3 establishes the single exit design condition as the default. Proposal E24-18 substitutes the term exit access travel distance in lieu of common path of egress travel for the previously stated reason. The proposal and its logic are severely flawed. In the published justification for approval the initial submittal states, "Single exit stories/buildings cannot have a common path of egress travel since two exits are not required." This statement is in direct contravention with the definition of common path of egress travel. That definition states, "That portion of exit access travel distance measured for the most remote point of each room, area or space to that point where the occupants have separate and distinct access to two exits or exit access doorways." By definition, all travel within a story served by a single exit is common path of egress travel as two exits are not available.

Section 1006 establishes the provisions for the determination of the required number of exits or exit access doorways from various building areas. As previously stated, the default is a single exit/exit access doorway design condition. A second exit is required when either of two considerations is exceeded. Those issues are occupant load and common path of egress travel. Specifically, when the common path of egress travel is exceeded (that is, occupants do not have separate and distinct access to two exits or exit access doorways) a second exit/exit access doorway becomes required. Accordingly, common path of egress travel is the correct term when referencing areas served by a single exit. Where E24 utilizes the term exit access travel distance, it should be noted that the definition of common path of egress travel states that common path of egress travel is that portion of exit access travel distance..... The specific term is appropriate.

Approval of E24-18 will create confusion among code practitioners. Table 1006.2.1 provides criteria for the determination of a second required exit/exit access doorway from individual rooms, areas or spaces. Those criteria are occupant load and common path of egress travel. Using a different criterion in Tables 1006.3.3.1 and 1006.3.3.2 for the determination of a second required exit from a given story begs the question: Why are there different terms used within the same section? The answer is that they should not be different.

There is no confusion if the code practitioner reads the definition of Section 202 and determines the applicable technical requirements of Section 1006. All provisions are in technical context. Approval of E24-18 will create confusion as opposed to providing clarification as hoped. The published reason statement also stated, "This will coordinate the terminology in the table with the current footnotes and similar sections in the IEBC." That coordination should occur as errata to current footnote and IEBC provisions so that they correctly reference common path of egress travel requirements in accordance with fundamental IBC provisions.

Approval of this public comment for disapproval of E24-18 will maintain current logical and understandable provisions for the determination of second exits from given building stories.
**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.
Approval of this public comment will retain current code provisions.
**Proposed Change as Submitted**

**Proponent:** Micah Chappell, representing City of Seattle (micah.chappell@seattle.gov)

**2018 International Building Code**

Revise as follows

**1009.2.1 Elevators required.** In buildings where a required accessible floor or occupied roof is four or more stories above or below a level of exit discharge, not less than one required accessible means of egress shall be an elevator complying with Section 1009.4.

**Exceptions:**

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit and located at or above the levels of exit discharge.

2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1012.

**Reason:** The code recognizes that there are practical limits to complete reliance on assisted evacuation of building occupants by fire personnel because of the limited availability of trained personnel or special devices. As a result, current ICC language requires an elevator be part of the accessible means of egress starting with the 4th story above the level of exit discharge (see 1009.2.1). Occupied roofs at the same level do not currently have this same requirement. The vertical travel distance encountered by a fire fighter performing an assisted rescue is the same whether the occupants are on an occupied roof on the 4th floor above the level of exit discharge or whether they are on the floor of the 4th story above the level of exit discharge within the building. As occupied roofs become more popular this becomes more of an issue for building departments around the country. Occupied roofs at four or more stories above the level of exit discharge should be treated like occupied floors at the same level in the building. The occupant loads and hazards are similar between occupied roofs and occupied floors, the benefits to occupants and fire personnel from an elevator with emergency back-up power are similar, and a similar approach has been taken in other sections of the building code (see IBC Chapter 10 1006.3, 1006.3.2, and 1006.3.3). The 2018 IBC 1104.4 also requires at least one accessible route to each accessible story, mezzanine and occupied roof in multilevel buildings and facilities. If the requirements for an accessible route to the accessible level treat the occupied roof and accessible floor in the same manner, it is logical to conclude that the same level of protection for the accessible means of egress from an occupied roof should be required.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This proposal clarifies the current intent of the accessible means of egress provisions of IBC 1009.2.1. The added language clarifies that an area of refuge and emergency power/legally required standby power must be provided per IBC 1009.4 for an occupied roof that is four or more stories above the level of exit discharge.

No fiscal impact.
Public Hearing Results

Committee Action: As Submitted

Committee Reason: This tells you when standby power is required for an elevator for building with an occupied roof. Occupied roofs are not currently addressed. The vertical distance for assisted rescue for a roof on the top of a 4 story building is the same as a 5th floor, so standby power should be required. Separate provisions for the occupied roof, to avoid confusion over if the occupied roof is a story, floor or level, would make this cleaner. There is an question with the current exception for horizontal exits as an alternative for standby power being permitted on lower floors, which would not be buildable on the roof. Occupied roofs, by being open to the outside air, may be safer than the floor with horizontal exits. See E29-18. (Vote: 8-7)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Micah Chappell, representing Seattle Department of Construction and Inspection (micah.chappell@seattle.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1009.2.1 Elevators required. In buildings where a required accessible floor or occupied roof is four or more stories above or below a level of exit discharge, not less than one required accessible means of egress shall be an elevator complying with Section 1009.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors or occupied roof provided with a horizontal exit and located at or above the levels of exit discharge.

2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1012.

Commenter's Reason: Original proposal was approved by Committee. See 2018 Committee Action Hearing for original reason statement. This modification coordinates the charging language change approved at the CAH with Exception 1.

Exception 1 acknowledges that a building that is fully sprinklered and a horizontal exit provides an acceptable level of protection. That level of protection is also achieved with an occupied roof meeting these criteria thus the exception should apply.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
No fiscal impact.

Public Comment 2:

Proponent: Micah Chappell, representing Seattle Department of Construction and Inspection (micah.chappell@seattle.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code
1009.2.1 Elevators required. In buildings where a required accessible floor or occupied roof is four or more stories above or below a level of exit discharge, not less than one required accessible means of egress shall be an elevator complying with Section 1009.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit and located at or above the levels of exit discharge.

2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors or occupied roof provided with a ramp conforming to the provisions of Section 1012.

Commenter's Reason: Original proposal was approved by Committee. See 2018 Committee Action Hearing for original reason statement.

This modification coordinates the charging language change approved at the CAH with Exception 2.

Exception 2 applies where sprinklers are provided, and the ramp provides an adequate route down for assisted rescue. That level of protection is also achieved with an occupied roof meeting these criteria thus the exception should apply.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction

No fiscal impact.

Public Comment 3:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@iccsafe.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1009.2.1 Elevators required. In buildings where a required accessible floor or occupied roof is four or more stories above or below a level of exit discharge or where an accessible occupied roof is above a story that is three or more stories above the level of exit discharge, not less than one required accessible means of egress shall be an elevator complying with Section 1009.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit and located at or above the levels of exit discharge.

2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1012.

Commenter's Reason: The new language is confusing. An occupied roof is not a story. Therefore, to be clear, the requirement for an occupied roof should be dealt with separately. It is not the intent of this public comment to change to result of what was voted approved by the MOE Code Development Committee.

It is important to point out that the original change said that there was no fiscal impact. Since the occupied roof is not considered a story, with the 2018 text, it could have been interpreted that standby power was not required to an occupied roof on a 5 story building. Therefore, this does have a significant cost for a 4 story building that decides to have an occupied roof.

The result will be as follows: 

2018 ICC PUBLIC COMMENT AGENDA 615
This public comment is submitted by the ICC BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions there of. In 2017 and 2018 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes and public comments. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. This modification is a clarification of requirements, and will not change the requirement of the approved change. However, the original proposal claimed that there was no fiscal impact. Depending on how an occupied roof was interpreted, this could have significant fiscal impact by requiring standby power to the elevator in a 4 story building with an occupied roof.

Public Comment 4:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@iccsafe.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1009.2.1 Elevators required. In buildings where a required accessible floor or occupied roof is four or more stories above or below a level of exit discharge, not less than one required accessible means of egress shall be an elevator complying with Section 1009.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a horizontal exit and located at or above the levels of exit discharge.
2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required on floors provided with a ramp conforming to the provisions of Section 1012.
3. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required for an occupied roof where the floors below are provided with a horizontal exit and located at or above the level of exit discharge.

Commenter's Reason: It is important to note that Section 1009.2.1 is for where an elevator is required for exiting, it is not the requirement for an accessible route to the roof (Section 1104.4). This requirement results in standby power to the elevator for fire department assisted rescue. A building 5 stories or taller can use a horizontal exit so that the floors do not have to have standby power to the elevator. Protection for occupants is by moving from one smoke compartment to another. An occupied roof cannot provide a horizontal exit, but it is open to the outside air – which offers an equivalent or safer level of protection for occupants. The intent of the new exception 3 is that if someone has horizontal exits and a sprinkler system in the floors below the occupied roof, having an occupied roof would not then also trigger standby power. Very often the occupied roof area is smaller than the area of the floor below. Requiring standby power is a significant cost impact on a building. An example of application might be a 4 story or taller hospital that has a helicopter landing pad on the roof.
This will not change the original proposal, which will require standby power in a 4 story building with an occupied roof where the building does not have both sprinklers and horizontal exits.

The following is a diagram for illustration of this exception.

![Diagram of building levels and exits]

This public comment is submitted by the ICC BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 and 2018 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes and public comments. Related documentation and reports are posted on the BCAC website at: [https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac](https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac)

**Cost Impact:** The net effect of the public comment and code change proposal will decrease the cost of construction. With the currently approved original proposal in place, this would be a cost savings for building with horizontal exits by not also requiring standby power to the elevator for just the occupied roof.
Proposed Change as Submitted

Proponent: Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com)

2018 International Building Code

Add new text as follows

1009.2.2 Separation of means of egress. Where more than one accessible means of egress is required, the entrance to at least two of the exits, stairways or elevators serving as part of the accessible means of egress shall be separated by a distance not less than 30 feet (9144 mm).

Reason: Because the elevator can serve as a component of the accessible means of egress, a standard core design with stairways at the opposite sides of the core and elevators in the middle will not allow a traditional remoteness application for the accessible means of egress. However, some separation should be required so that the possibility of a single event preventing egress is limited. The language is similar to that in Section 403.5.1 for remoteness of interior exit stairways in high rise buildings. In the case where multiple accessible means of egress are provided, the separation would apply to at least two of them.

Cost Impact: The code change proposal will increase the cost of construction. The possibility exists that some building configurations will need to be revised to accommodate this remoteness. In reality, it is unlikely that any measurable increase will exist for most buildings.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: The 30 feet separation, where an elevator is required as one of the accessible means of egress may be too tough for small buildings. Section 403.5.1 was referenced for justification, but it is different - it allows for ¼ as well as 30 feet and it measures to the shafts instead of the entrances. In addition, this could be read as requiring elevators to be at least 30 feet apart. Two accessible means of egress next to each other would not meet the current criteria for independent means of egress, so this is already adequately addressed. (Vote: 8-5)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1009.2.2 Separation of means of egress. Where more than one accessible means of egress is required, the entrance to at least two of the exits, stairways or elevators serving as part of the accessible means of egress shall be separated by a distance that is not less than one-quarter of the length of the maximum overall diagonal of the building or area served, measured in a straight line between them; or, a minimum of 30 feet (9144 mm); whichever is less.

Commenter's Reason: The committee felt that the measurement based on a diagonal as well as a fixed dimension would be more appropriate and that the 30 feet separation could be onerous for small floor plate floors. The proposal addresses both of those by including the 1/4 diagonal criteria as well as the 30 feet but then allowing the lesser of the two to be used. This would address the condition where a core of the building has two stairways very near to one another and the elevators located between them. It is important that we have something in the code to address this separation. Right now there is nothing that prevents two elevators, side by side in the same shaft, from being used as both accessible means of egress. This addresses that need.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The net effect may increase costs. In most cases there will be no increase in cost but it would be foolish to expect there not being some condition, somewhere that would need to be adjusted to accommodate this criteria for separation.
Proposed Change as Submitted

Proponent: Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com)

2018 International Building Code

Revise as follows

1009.4 Elevators. In order to be considered part of an accessible means of egress, an elevator shall comply with Sections 1009.4.1 and 1009.4.2 through 1009.4.3.

Add new text as follows

1009.4.3 Location. Where multiple elevators serve as more than one of the accessible means of egress, the elevators serving as different accessible means of egress must be provided with separate operating systems in accordance with Section 3003 and be located in separate elevator banks.

Reason: The provisions for elevators as accessible means of egress were written assuming only one group of elevators in a building. The second means of egress would always be a stairway. Literally, there is no limitation of how many elevators can be used to fulfill the requirement in Section 1009.1 for multiple accessible means of egress. It is reasonable to require some separation between elevators if the option selected is to use elevators for all the accessible means of egress. These elevators should not be in the same bank of elevators, but somewhere else in the building. This is a viable option in large building with banks of elevator spaced throughout the building.

Cost Impact: The code change proposal will increase the cost of construction. In the rare situation where multiple elevators are used, the increased cost would be that for the separation between hoistways.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: The phrase “operating systems” could be read to require a separate power source and standby power. This could conflict with the requirements for Occupant Evacuation Elevators. There term ‘banks’ is not currently defined - so this could be read differently than the intent of the proposal to use elevators in different part of the building rather than banks of elevators facing each other. There is no technical justification or identified issues to require this additional language. (Vote: 11-3)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1009.4 Elevators. In order to be considered part of an accessible means of egress, an elevator shall comply with Sections 1009.4.1 through 1009.4.3.

1009.4.3 Location. Where multiple elevators serve as two or more than one of the accessible means of egress, the elevators serving as different accessible means of egress shall be provided in separate elevator banks, provided with separate operating systems in accordance with Section 3003 and be located in separate elevator banks.

Commenter’s Reason: The committee felt that the language was overly complicated. Unfortunately the term “elevator bank” is not defined in the code, although it is used frequently. The language was changed from a reference to the emergency operating systems to instead rely on the smoke detector provided at the elevator lobby. Because one bank of elevator could be across the lobby from another, the reference would limit this to conditions where a multiple banks of elevators are provided or where a bank of passenger elevators and a separate service elevator are intended as the accessible means of egress. There is no requirement that more than one elevator be provided as part of the accessible means of egress. Certainly an elevator and a stairway could be used. This provision would only apply where elevators and not stairways are intended. It is a safety measure to prevent the condition where two elevators could be used, both within the same hoistway. There is nothing within the code to prohibit this currently. We need something to address that flaw.

This is offered as an alternative to E31.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. It is exceedingly unlikely that elevators will be used as the only accessible means of egress within a building. However, if such a condition would be created, this proposal would increase the cost by requiring a separation of elevators.

E32-18
Proposed Change as Submitted

Proponent: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (Eirene.Knott@brrarch.com)

2018 International Building Code

Revise as follows

1009.6.2 Stairway or elevator access. Every required area of refuge shall have direct access to a stairway complying with Sections 1009.3 and 1023 or an elevator complying with Section 1009.4.

Exception: An interior area of refuge at the level of exit discharge that provides direct access to an exterior exit door.

Reason: While the code provides clear direction that areas of refuge in a multi story building must have direct access to an elevator or stairway, it is not clear on what qualifies as an interior area of refuge in a single story building. The purpose of this code change is to provide clear direction in the code that an interior area of refuge is permitted in a single story building, or in a multi-story building on the level of exit discharge, without a stairway or elevator which provides immediate access to the exterior of the building.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. If the code will now allow for an interior area of refuge in a single story building or on the level of exit discharge in a multi-story building, rather than require an exterior area of refuge in either situation, this may actually reduce the cost of construction as the exterior wall would no longer need to have a fire resistance rating.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: An interior area of refuge should be at a discoverable location, so having an area of refuge at a back door is not a good idea. You can do an exterior area of assisted rescue at the grade level back exit, which is preferred. (Vote: 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com) requests As Submitted.

Commenter's Reason: The committee said that an interior area of refuge should be at a discoverable location. IBC Section 1009.9 and 1111.3 Item 3 require areas of refuge to be signed on the outside of the door leading to that area. That makes the area of refuge ‘discoverable’ by the occupants. The fire and safety plans in IFC 404.2.1 Item 4 and 404.2.2 Item 4.4.1 make sure the fire department knows where these areas are located. Currently the text does not address an area of refuge in a single story building at the second exit. It only addresses areas of refuge on upper floors. The proposed text fixes that technical glitch.

The image below represents what this proposed code change is attempting to allow, an interior area of refuge with direct access to the exterior of the building.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

If the code will now allow for an interior area of refuge in a single story building or on the level of exit discharge in a multi-story building, rather than require an exterior area of refuge in either situation, this may actually reduce the cost of construction as the exterior wall would no longer need to have a fire resistance rating in non-sprinklered buildings.
Proposed Change as Submitted

Proponent: Gregory Keith, representing The Boeing Company (grkeith@mac.com)

2018 International Building Code

Revise as follows

1010.1 Doors General. Means of egress doors shall meet the requirements of this section. Doors, gates and turnstiles serving a means of egress system shall meet the applicable requirements of this section and Section 1022.2. Doors provided for egress purposes in numbers greater than required by this code shall meet the requirements of this section. Means of egress doors shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on means of egress doors. Means of egress doors shall not be concealed by curtains, drapes, decorations or similar materials.

Add new text as follows

1020.1 General. Corridors serving as an exit access component in a means of egress system shall comply with the requirements of this section.

Revise as follows

1024.1 Exit passageways General. Exit passageways serving as an exit component in a means of egress system shall comply with the requirements of this section. An exit passageway shall not be used for any purpose other than as a means of egress and a circulation path.

1026.1 Horizontal exits General. 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 minimum width or required capacity 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. Not less than 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.

1027.1 Exterior exit stairways and ramps General. Exterior exit stairways and ramps serving as an element of exit component in a required means of egress system shall comply with the requirements of this section.

Add new text as follows

1029 EGRESS COURTS

Revise as follows

1029.1 Egress courts General. Egress courts serving as a portion of the an exit discharge component in the means of egress system shall comply with the requirements of Sections 1028.4.1 and 1028.4.2 in this section.

1028.4 Width or capacity. The required capacity of egress courts shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm), except as specified herein. Egress courts serving Group R-3 and U occupancies shall be not less than 36 inches (914 mm) in width. The required capacity and width of egress courts shall be unobstructed to a height of 7 feet (2134 mm). The width of the egress court shall be not less than the required capacity.

Exception: Encroachments complying with Section 1005.7.
1028.4.2 1029.3 Construction and openings. Where an egress court serving a building or portion thereof is less than 10 feet (3048 mm) in width, the egress court walls shall have not less than 1-hour fire-resistance-rated construction for a distance of 10 feet (3048 mm) above the floor of the egress court. Openings within such walls shall be protected by opening protectives having a fire protection rating of not less than 3/4 hour.

Exceptions:

1. Egress courts serving an occupant load of less than 10.
2. Egress courts serving Group R-3.

Reason: This is a series of editorial revisions intended to formalize the charging language of several sections within Chapter 10. The International Building Code is a so-called model code. Once adopted by a given political subdivision it becomes law. Having proper enabling or charging provisions for various technical requirements is legally necessary. Presently, Section 1020 for corridors contains no charging language. A general section has been created using the same format as is currently used in Section 1018 for aisles and Section 1019 for exit access stairways and ramps.

Section 1010.1 has been improved by adding the "General" section title to be consistent with other means of egress component sections. Additionally, the first and second sentences of Section 1010.1 are redundant. The first sentence has been deleted. The second sentence now clarifies that the section is applicable to gates and turnstiles consistent with the Section 1010 heading.

The titles of Sections 1024.1, 1026.1 and 1027.1 have been changed to "General" to be consistent with other means of egress component sections.

Lastly, egress courts are a means of egress component. In the Chapter 10 format, individual means of egress components have their own section. Currently, egress court provisions are located in Section 1028.4 within the exit discharge section. This proposal simply relocates the egress court technical provisions to a new Section 1029 so as to be consistent with other Chapter 10 provisions.

This proposal establishes the proper legal charging language for lacking sections. In doing so, it provides consistency within the various Chapter 10 means of egress component sections. Some practitioners are given to assigning an importance factor between different terms and formats. Approval of this proposal will clarify these important means of egress provisions.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This proposal is essentially editorial.
Public Hearing Results

Committee Action: As Modified

Committee Modification: 1010.1 Doors General. Means of egress doors shall meet the requirements of this section. Doors, gates, and turnstiles serving a means of egress system shall meet the applicable requirements of this section and Section 1022.2. Doors provided for egress purposes in numbers greater than required by this code shall meet the requirements of this section. Means of egress doors shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on means of egress doors. Means of egress doors shall not be concealed by curtains, drapes, decorations or similar materials.

Committee Reason: The modification was to remove the change to Section 1010.1 from the proposal. The changes in E37-18 addressed this in a more comprehensive manner. The revised language is consistent with the remainder of the sections in the code. There was concern about pulling Egress Courts out of the section for exit discharge without a general statement for this means of egress part as indicated in Sections 1003.1, 1014.1 and 1020.1. (Vote: 10-4)

Assembly Action: None

E38-18

Individual Consideration Agenda

Public Comment 1:

Proponent: Gregory Keith, representing The Boeing Company (grkeith@mac.com) requests As Modified by This Public Comment.

Further modify as follows:

2018 International Building Code

1028.1 General. The exit discharge shall comply with Sections 1028 and 1029 and the applicable requirements of Sections 1003 through 1015.

Commenter’s Reason: A committee comment was, “There was concern about pulling Egress Courts out of the section for exit discharge without a general statement for this means of egress part as indicated in Sections 1003.1, 1014.1 and 1020.1." This public comment creates appropriate charging language and cross references at Section 1028.1 so as to be consistent with other means of egress parts sections. Approval of this public comment will clarify E38-18 in accordance with committee comments.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction

This public comment is editorial in nature.

Public Comment 2:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc SAFE.org) requests As Modified by This Public Comment.

Further modify as follows:

2018 International Building Code

1029 EGRESS COURTS

1029.1-1028.4 General Egress courts. Egress courts serving as a portion of the exit discharge component in the means of egress system shall comply with the requirements in Sections 1028.4.1 and 1028.4.2.

1029.2-1028.4.1 Width or capacity. The required capacity of egress courts shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm), except as specified herein. Egress courts serving Group R-3 and U occupancies shall be not less than 36 inches (914 mm) in width. The required capacity and width
of *egress courts* shall be unobstructed to a height of 7 feet (2134 mm).
The width of the *egress court* shall be not less than the required capacity.

**Exception:** Encroachments complying with Section 1005.7.

### 1029.3-1028.4.2 Construction and openings

Where an *egress court* serving a building or portion thereof is less than 10 feet (3048 mm) in width, the *egress court* walls shall have not less than 1-hour fire-resistance-rated construction for a distance of 10 feet (3048 mm) above the floor of the *egress court*. Openings within such walls shall be protected by opening protectives having a fire protection rating of not less than $\frac{3}{4}$ hour.

**Exceptions:**

1. *Egress courts* serving an occupant load of less than 10.

**Commenter’s Reason:** This proposal is to move the requirements for egress courts back into its current position as a part of Section 1028. Splitting exit discharge into 2 sections is adding confusion for users. Also, the scoping language for exit discharge in more than one section was not proposed – so this could be a conflict with the format of Chapter 10 in the scoping for general, exit access and exit language in Sections 1003.1, 1016.1 and 1022.1. This public comment is submitted by the ICC BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions there of. In 2017 and 2018 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes and public comments. Related documentation and reports are posted on the BCAC website at: [https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac](https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac)

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This modification is returning existing text to its original location. There are no changes in requirements.
**Proposed Change as Submitted**

**Proponent:** John Woestman, Kellen Co., representing Builders Hardware Manufacturers Association (BHMA)
(jwoestman@kellencompany.com)

**2018 International Building Code**

Revise as follows

1010.1.1 Size of doors. The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width 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 opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). In Group I-2, doors serving as means of egress doors where used for the movement of beds shall provide a minimum clear opening width of 411/2 inches (1054 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. The minimum clear opening height of doors shall be not less than 80 inches (2032 mm).

**Exceptions:**

1. In Group R-2 and R-3 dwelling and sleeping units that are not required to be an Accessible unit, Type A unit or Type B unit, the minimum and maximum width shall not apply to door openings that are not part of the required means of egress.
2. In Group I-3, door openings to resident sleeping units that are not required to be an Accessible unit shall have a minimum clear opening width of 28 inches (711 mm).
3. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum clear opening width.
4. The maximum width of door leaves in revolving doors that comply with Section 1010.1.4.1 shall not be limited.
5. The maximum width of door leaves in power-operated doors that comply with Section 1010.1.4.2 shall not be limited.
6. Door openings within a dwelling unit or sleeping unit shall have a minimum clear opening height of 78 inches (1981 mm).
7. In dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, exterior door openings other than the required exit door shall have a minimum clear opening height of 76 inches (1930 mm).
8. In Groups I-1, R-2, R-3 and R-4, in dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, the minimum clear opening widths shall not apply to interior egress doors.
9. Door openings required to be accessible within Type B units intended for user passage shall have a minimum clear opening width of 31.75 inches (806 mm).
10. Doors to walk-in freezers and coolers less than 1,000 square feet (93 m²) in area shall have a maximum width of 60 inches (1524 mm) nominal.
11. The minimum clear opening width shall not apply to doors for nonaccessible shower or sauna compartments.
12. The minimum clear opening width shall not apply to the doors for nonaccessible toilet stalls.

**Reason:** This proposal deletes the 48” maximum width requirements for swinging doors.

From the IBC Commentary: The maximum width for a means of egress door leaf in a swinging door is 48 inches (1219 mm) because larger doors are difficult to handle and are of sizes that typically are not fire tested.

We somewhat agree with this statement in the IBC Commentary. However, it is the width plus the height and the construction of the door (i.e. weight) which results in a door which may be difficult to open and / or close. Our perspective is the performance requirements in IBC Section 1010.1.3 Door Opening Force and the Chapter 11 Accessibility requirements effectively result in the design and installation of appropriately-sized doors. Regarding fire tested doors (i.e. fire-rated doors) - the solution is simple - install fire-rated doors which meet the existing door opening force requirements of the IBC.

The revision in the 1st exception correlates with the proposed deleted text in the charging paragraph.

The revision in the 4th exception clarifies the exception.
From a different perspective, NFPA 101 has not had a requirement for maximum swinging door leaf width since the 1997 edition, stating there is insufficient reason to limit the maximum width of a door leaf provided the door is maintained in good working order. In addition, there is a trend in health-care occupancies for wider doorways to accommodate patient and equipment movement needs.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. We see no cost implications for the vast majority of buildings. However, this proposal may allow the use of a single door – that meets all IBC operational force requirements – where today the 48" width limit results in two doors in an opening. In these rare situations, the cost of construction may be reduced.
Public Hearing Results

Committee Action: As Submitted
Committee Reason: The committee agreed that there is no longer a need to regulate the maximum size of a door. The maximum size of a door is adequately addressed by the force requirements, closing speed and fire door testing. It was suggested that the maximum door size in Exception 10 should be deleted as part of a public comment for consistency. (Vote: 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Keith Pardoe, representing Pardoe Consulting, LLC (kpardoe@pardoeconsultingllc.com) requests Disapprove.

Commenter’s Reason: I recommend the committee disapprove this proposal for the following reasons:
1) The proposal does not offer any technical justification that would compel this change to be approved. There are several reasons, as to why the 48-inch limitation be retained. First, the maximum size of fire rated swinging doors is 48 inches, and hardware components such as fire exit hardware are ONLY listed for use on doors up to 48 inches in width. In the case of fire rated doors, wide doors are more likely to fail fire door testing than doors of ordinary width (e.g., 36 inch-wide doors). In fact, some narrow (less than 32 inch-wide) steel stiffened doors have failed fire door tests due to their increased rigidity. Second, swinging doors are subject to encroachment limitations, wider doors are more likely to encroach on the path of egress. And, lastly, wider doors are less likely to comply with the opening forces in section 1010.1.3.

2) There are special circumstances where swinging doors, that are not in a required means of egress, are wider than 48 inches. For example, aluminum swinging doors in a car dealership showroom are usually 60-inches wide (or wider), but these doors are ONLY used for moving vehicles into or out of the showroom floor. In other words, these doors are NOT required or used for egress purposes. And, there are other special circumstances where wider doors of other construction might be needed; they are NOT in the required means of egress.

3) The proposal does not cite any technical justification for permitting doors in R-2 and R-3 occupancies to have wider doors.

4) The insertion of the word “maximum” as an adjective in item (4) is unnecessary and does not improve the section.

5) The reasoning statement is more a statement of opinion that fact. No technical justification is offered for removing the 48 inch-wide limitation for swinging doors. When wider door opening are needed, we simply use a pair of swinging doors, which can provide nearly 96 inches of clear opening width.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
Disapproving this proposal will not have a cost impact.
Proposed Change as Submitted

Proponent: Eirene Knott, BRR Architecture, representing Metropolitan Kansas City Chapter of the ICC (Eirene.Knott@brrarch.com)

2018 International Building Code
Revise as follows

1010.1.1 Size of doors. The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width 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 opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). In Group I-2, doors serving as means of egress doors where used for the movement of beds shall provide a minimum clear opening width of 41 1/2 inches (1054 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. The minimum clear opening height of doors shall be not less than 80 inches (2032 mm).

Exceptions:

1. In Group R-2 and R-3 dwelling and sleeping units that are not required to be an Accessible unit, Type A unit or Type B unit, the minimum and maximum width shall not apply to door openings that are not part of the required means of egress.
2. In Group I-3, door openings to resident sleeping units that are not required to be an Accessible unit shall have a minimum clear opening width of 28 inches (711 mm).
3. Door openings to storage closets less than 10 square feet (0.93 m2) in area shall not be limited by the minimum clear opening width.
4. The width of door leaves in revolving doors that comply with Section 1010.1.4.1 shall not be limited.
5. The maximum width of door leaves in power-operated doors that comply with Section 1010.1.4.2 shall not be limited.
6. Door openings within a dwelling unit or sleeping unit shall have a minimum clear opening height of 78 inches (1981 mm).
7. In dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, exterior door openings other than the required exit door shall have a minimum clear opening height of 76 inches (1930 mm).
8. In Groups I-1, R-2, R-3 and R-4, in dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, the minimum clear opening widths shall not apply to interior egress doors.
9. Door openings required to be accessible within Type B units intended for user passage shall have a minimum clear opening width of 31.75 inches (806 mm).
10. Doors to walk-in freezers and coolers less than 1,000 square feet (93 m2) in area shall have a maximum width of 60 inches (1524 mm) nominal.
11. The minimum clear opening width shall not apply to doors for nonaccessible shower or sauna compartments.
12. The minimum clear opening width shall not apply to the doors for nonaccessible toilet stalls.
13. The minimum clear opening width shall not apply to the doors for nonaccessible dressing, fitting or changing rooms.

Reason: In the 2015/2016/2017 code development cycle, two changes, E47 and F243, were approved which added language in this section to allow for doors serving non-accessible saunas, shower compartments and toilet stalls to be less than 32 inches. The doors serving dressing/fitting/changing rooms serve the same purpose as these doors, which is to provide for access into and out of the room. If accessible dressing/fitting/changing rooms are provided per IBC 1109.12.1, the remaining dressing/fitting/changing rooms would meet the same requirements as those non-accessible sauna, shower compartment and toilet stall doors.

Cost Impact: The code change proposal will decrease the cost of construction. This proposal may decrease the cost of construction if a smaller door is permitted as less materials will be required.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: This exception could be misapplied to the main door of a large dressing room, such as that used for a bridal fitting room where there would be multiple occupants. It was suggested to limit this to single-user dressing rooms. There should be a minimum size to forestall any size door being permitted. The term ‘changing’ rooms is not consistent with Section 1109.12.1 for accessibility requirements. (Vote: 9-5)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Eirene Knott, representing Metropolitan Kansas City Chapter of the ICC (eirene.knott@brrarch.com) requests
As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width 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 opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). In Group I-2, doors serving as means of egress doors where used for the movement of beds shall provide a minimum clear opening width of 41 2/ inches (1054 mm). The maximum width of a swinging door leaf shall be 48 inches (1219 mm) nominal. The minimum clear opening height of doors shall be not less than 80 inches (2032 mm).

Exceptions:

1. In Group R-2 and R-3 dwelling and sleeping units that are not required to be an Accessible unit, Type A unit or Type B unit, the minimum and maximum width shall not apply to door openings that are not part of the required means of egress.
2. In Group I-3, doors openings to resident sleeping units that are not required to be an Accessible unit shall have a minimum clear opening width of 28 inches (711 mm).
3. Door openings to storage closets less than 10 square feet (0.93 m²) in area shall not be limited by the minimum clear opening width.
4. The width of door leaves in revolving doors that comply with Section 1010.1.4.1 shall not be limited.
5. The maximum width of door leaves in power-operated doors that comply with Section 1010.1.4.2 shall not be limited.
6. Door openings within a dwelling unit or sleeping unit shall have a minimum clear opening height of 78 inches (1981 mm).
7. In dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, exterior door openings other than the required exit door shall have a minimum clear opening height of 76 inches (1930 mm).
8. In Groups I-1, R-2, R-3 and R-4, in dwelling and sleeping units that are not required to be Accessible, Type A or Type B units, the minimum clear opening widths shall not apply to interior egress doors.
9. Door openings required to be accessible within Type B units intended for user passage shall have a minimum clear opening width of 31.75 inches (806 mm).
10. Doors to walk-in freezers and coolers less than 1,000 square feet (93 m²) in area shall have a maximum width of 60 inches (1524 mm) nominal.
11. The minimum clear opening width shall not apply to doors for nonaccessible shower or sauna compartments.
12. The minimum clear opening width shall not apply to the doors for nonaccessible toilet stalls.
13. The minimum clear opening width shall not apply to the doors for nonaccessible dressing rooms.

2018 ICC PUBLIC COMMENT AGENDA
Commenter’s Reason: The committee disapproved this code change as they felt that the original language was not specific enough to apply only to a single user dressing, fitting or changing room. There was discussion about bridal party changing rooms as an example. The committee also wanted the laundry list shortened so I have attempted to combine the last three items into one exception to address doors serving single user toilet rooms, shower or sauna compartments as well as the fitting, dressing or changing rooms. This code change is intended to allow for the reduction in door size serving individual compartments for these specific applications. It is not necessary to provide a 32 inch clear width on a non-accessible compartment that is intended to be used by one person.

I did research to determine if 20 inches would address doors serving these types of individual uses. On average, a door for a single user toilet compartment is 24 inches in width. Most fitting room doors are 32 inches in width. Most individual use saunas utilize a 24 inch door and most commercial showers utilize a minimum door of 22 inches. In an effort to cover all of these door sizes, I chose 20 inches as a minimum.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction if approved, this has the potential to decrease the cost of construction as smaller doors would be permitted.
**Proposed Change as Submitted**

**Proponent:** John Woestman, representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com)

**2018 International Building Code**

Revise as follows

**1010.1.1.1 Projections into clear width opening.** There shall not be projections into the required clear opening width lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm).

**Exception:** Door closers, overhead door stops, power door operators, and electromagnetic door stops locks shall be permitted to be 78 inches (1980 mm) minimum above the floor.

**Reason:** Clarifying the “door stops” in the exception are overhead door stops. Also, proposing to include in the exception door operational hardware which is commonly installed and may project into the opening at the top of the doorway. And, it seems appropriate to revise the title of Section 1010.1.1.1.

Below are several pictures which illustrate these hardware items.

- [Overhead door stop](image)
  Photo courtesy ASSA ABLOY

- [Power door operator](image)
  Photo courtesy dormakaba
Cost Impact: The code change proposal will not increase or decrease the cost of construction.
No cost implications identified with this proposal. This allows additional door operation with no increase in code requirements.

E41-18
Public Hearing Results

Committee Action: As Submitted

Committee Reason: This proposal adds common use terminology for door hardware and clarifies allowances for other types of doors. (Vote: 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Keith Pardoe, representing Pardoe Consulting, LLC (kpardoe@pardoeconsultingllc.com) requests Disapprove.

Commenter’s Reason: I recommend the committee disapprove this proposal for the following reasons:

1) The existing section is concerned with ensuring door openings provide sufficient clear opening width for egress purposes. The second statement in 1010.1.1.1 recognizes that certain arrangements of hardware could reduce the clear opening width.

2) The assertion in the reason statement that "...the 'door stops' in the exception are overhead stops" is incorrect. Doors with a nominal height of 80 inches have a actual clear opening height that is reduced by two elements; the height of the integral door stop of the frame, and the thickness of any floor covering material passing through the door opening. In the case of standard hollow metal door frames, the height of the integral door stop is 5/8-inch. And, when the door frame is aluminum, the height of the integral door stop is 1/2-inch. The exception refers to the integral door stops of the frames, it does not refer to overhead stops that are types of door hardware components.

3) Regarding the application of door closers, as covered in the exception, it is referring to the use of parallel arm brackets that are attached to the soffit of door frames—the soffit of a door frame is the raised flat surface between the door rabbet and the non-door rabbet of the frame. For this reason, the application of a parallel arm bracket in combination with the thickness of the floor covering material can reduce the clear opening height dimension of a door by 1 to 2 inches; ergo, the 78-inch exception for door closers and [the frame's integral] door stops.

4) The proposal does not include technical justification for adding the other hardware items to the exceptions.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. Disapproving this proposal will not have a cost impact.

E41-18
Proposed Change as Submitted

Proponent: John Woestman, Kellen Co., representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com)

2018 International Building Code
Revise as follows

1010.1.2 Door swing. Egress doors shall be of the pivoted or side-hinged swinging type, pivoted door, or balanced door types.

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 1010.1.4.1.
6. In other than Group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies complying with Section 1010.1.4.3.
7. Power-operated doors in accordance with Section 1010.1.4.2.
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.

1010.1.2.1 Direction of swing. Pivot or side-hinged swinging doors, pivoted doors, and balanced doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy.

Reason: Updating 1010.1.2 to add balanced doors to the other common types of swinging doors allowed and used in the means of egress. Also revising the title of the section. Requirements for panic hardware on balanced doors is addressed in 1010.1.10.2 (text pasted below) - thus it can be assumed the intent of the code is that balanced doors are OK for doors in the means of egress. Also, revising 1010.1.2.1 for consistency.

2018 IBC 1010.1.10.2 Balanced doors. If balanced doors are used and panic hardware is required, the panic hardware shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

Several pictures below illustrate these types of doors.
Cost Impact: The code change proposal will not increase or decrease the cost of construction. Proposal updates code technically to more closely match types of doors being installed in the means of egress.
**Public Hearing Results**

**Committee Action:** As Submitted

**Committee Reason:** This proposal specifically addresses balanced doors as a type of swinging door, which is consistent with the intent of the provisions. (Vote: 14-0)

**Assembly Action:** None

---

**Individual Consideration Agenda**

**Public Comment 1:**

**Proponent:** Keith Pardoe, representing Pardoe Consulting, LLC (kpardoe@pardoeconsultingllc.com) requests Disapprove.

**Commenter's Reason:** I recommend the committee disapprove this proposal for the following reasons:
1) The proposed seems to distinguish balanced doors, which are a type of pivoted door, from other types of pivoted doors. It is a distinction without a difference. Balanced doors are hung on top and bottom center pivots that are inset from the "hinge" edge the doors. Generally, balanced doors are a minimum of 42 inches in width so that they provide the required minimum width when opened to 90 degrees. The offset pivot point of balanced doors allow doors to open and close more easily by leveraging the building stack pressure against the surface of the doors.

2) The reason statement in the proposal seems to imply that balanced doors are not permitted to be used in the means of egress, which is not the case. Balanced doors have been in use in high-rise buildings for decades.

3) The proposal does not cite any confusion from AHJs, architects, building owners, or the door industry regarding the use of balanced doors in the means of egress that would be resolved by the committee's approval of this proposal.

4) Regarding the proposal's cross reference to 1010.1.10.2, the reason the length of panic hardware devices is restricted to "...not more than one-half the width of the door measured from the latch side" is that body of the device could reduce the clear opening width of the opening. However, this condition was remedied in section 1010.1.1.1 Projections into Clear Width when the following provision was added to the code: "Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm)." Most panic hardware devices are installed between 39 to 41 inches above the floor to the centerline of the actuating push pad or crossbar, and they do not project more than 4 inches into the clear opening width. In fact, the 4-inch projection was specifically allowed for the application of panic hardware and fire exit hardware devices to all types of swinging doors.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
Disapproval of this proposal will not have a cost impact.
Proposed Change as Submitted

Proponent: John Woestman, Kellen Co., representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com)

2018 International Building Code
Delete and substitute as follows

1010.1.3 Door opening force. The force for pushing or pulling open interior swinging egress doors, other than fire doors, shall not exceed 5 pounds (22 N). These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. For other swinging doors, as well as 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.

1010.1.3 Forces to unlatch and open doors. The forces to unlatch and to open doors shall comply with the following:

1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7 N). Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).
2. For manual interior swinging egress doors other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N).
3. For other swinging, sliding, or folding doors, and doors required to be fire-resistance-rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full-open position when subjected to not more than a 15-pound (67 N) force.

Reason: Updating and clarifying the maximum forces allowed to unlatch and open doors and correlating requirements with A117.1.

Item 1: The current IBC requirements in 1010.1.3 for maximum unlatching forces could be considered somewhat ambiguous. The proposed requirements in Item 1 are consistent with the requirements in the latest edition of A117.1, Section 404.2.6 and consistent with other ANSI standards for door hardware operational forces.

Items 2 and 3: The revisions in Items 2 and 3 are intended to clarify existing requirements in 1010.1.3.

Item 2 is based on the first sentence of 1010.1.3. Item 3 is based on the last two sentences of 1010.1.3.

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

This proposal clarifies this section of the code, and correlates the code requirements to current accessibility requirements and to current requirements in several ANSI standards for door hardware.
Public Hearing Results

Committee Action: As Submitted
Committee Reason: This updates and clarifies the requirements for door force and unlatching. This would coordinate with the 2017 edition of ICC A117.1. (Vote: 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Keith Pardoe, representing Pardoe Consulting, LLC (kpardoe@pardoeconsultingllc.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.3 Forces to unlatch and open doors. The forces to unlatch and to open doors shall comply with the following:

1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7N).
2. Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).

The forces to open doors shall comply with the following:

a. For manual interior swinging egress doors that are manually operated, other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N).
b. For other swinging doors, sliding doors, or folding doors, and doors required to be fire-resistance-rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full-open position when subjected to not more than a 15-pound (67 N) force.

Commenter's Reason: I recommend the committee consider revising this section, as shown above, for the following reasons:

This section addresses operating forces that are applied to A) release (unlatch) latching door hardware devices, and B) move door leaves to their full open position. Accordingly, it makes sense to separate these forces into subsections.

The existing language for this section focused on the requirements on interior doors. By striking out the phrase "...interior swinging..." the revised section now applies to all doors in the means egress, including exterior doors. The proposed revision clarifies that "interior" swinging doors, that are manually operated, are subject to the 5 lbf opening force—except for fire-rated doors.

In item (3) there is a reference to "...fire-resistance-rated doors..." Doors are fire protection-rated, not fire resistance-rated. The above-proposed revision resolves this issue by referencing "fire rated" doors.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

This proposal clarifies this section of the code, and correlates the code requirements to current accessibility requirements and to current requirements in several ANSI standards for door hardware.
Proposed Change as Submitted

Proponent: John Woestman, Kellen Co., representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com)

2018 International Building Code

Add new definition as follows

CONTROL VESTIBULE. A space with door locking arrangements of interlocked doors in series such that while one door of the control vestibule is open, the other door in series is temporarily locked.

Add new text as follows

1010.1.4.6 Control vestibule. Where doors in the means of egress are configured as a control vestibule, the door locking system shall provide for emergency egress and shall be subject to approval by the building official. A control vestibule in the means of egress shall comply with all of the following.

1. An approved override shall be provided on the egress side of each door of a control vestibule.
2. An approved override shall be provided on the ingress side of the outer door of a control vestibule.
3. Upon activation of the automatic sprinkler system or automatic fire detection system, the interlock function of the door locking system shall deactivate.
4. Upon loss of power to the interlock function of the doors, the interlock function of the door locking system shall deactivate.
5. The egress path from any point shall not pass through more than one control vestibule unless approved by the code official.
6. The door locking system units shall be listed in accordance with UL 294.

Reason: We are proposing a definition for “control vestibule” and proposing detailed requirements for control vestibules.

The significant difference between doors in series in the means of egress (i.e. one after the other) and doors in the means of egress configured as a control vestibule is the doors of a control vestibule are interlocked such that when one door of a control vestibule is open, the other door in series in the control vestibule is temporarily locked; and conversely, in the means of egress when all doors of a control vestibule are closed, any door may be opened.

Control vestibules are most commonly configured as a space with two doors in series. But, some control vestibules are configured with more than one inner door and / or more than one outer door. For example, where a control vestibule is required to help keep clean rooms clean, there may be inner doors from three different clean rooms opening into the control vestibule, and one outer door for leaving the control vestibule in the direction of egress.

The proposed requirements for control vestibules are for these reasons:

Item 1: A requirement to address the potential situation where one of the doors on the control vestibule is held open (example: a person faints in the outer doorway), other occupants may need to be able to egress through the control vestibule, especially in emergency situations. It is common the activation of an override would set off an alarm, and / or the activation of an override without a valid reason results in disciplinary action (i.e. employee gets fired).

Item 2: In the event the inner door of a control vestibule is held open (example: a person faints at the inner door), an override allows access into the control vestibule. The required override on the ingress side of the outer door allows for emergency access into the control vestibule, if needed. This override commonly requires a higher level of authorization for use and / or is provided for responding emergency crews.

Items 3 and 4: Requires the interlock function to be disabled in the event of fire, actuation of the fire detection system, or power loss to the interlock system rendering the control vestibule equivalent to two doors in the means of egress allowing unobstructed egress.

Item 5: Requires that egressing through the control vestibule involves no more than two doors, unless approved by the code official. While not common, there are situations where more than one control vestibule may be needed in the means of egress.
Item 6: Requires the units of the control vestibule locking system to be listed in accordance with UL 294, the same standard required for units for other electrical locking system units.

Together, the definition and proposed requirements provide for egress and emergency egress where control vestibules are installed.

Note: A control vestibule is different than a sallyport, which is defined in the IBC and permitted in Group I-3 occupancies. Group I-3 includes correction centers, detention centers, jails, prisons, and similar uses. A sallyport is a security vestibule which prevents unobstructed passage. A control vestibule is intended to allow unobstructed passage, but prevents more than one door of doors in series to be open at the same time.

Cost Impact: The code change proposal will decrease the cost of construction
Control vestibules are currently not addressed in the code. Where control vestibules are constructed, these requirements may include some locking requirements and interconnectedness currently not incorporated into some control vestibules.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: These provisions could conflict with sallyports for Group I-3. While this is needed for certain situations, as written this could be used in all occupancies for all doors – this should have limited application. Item #3 talks about the sprinkler system – is the intent to only allow this in sprinklered buildings, or is only where a sprinkler system is provided? The word ‘emergency’ is not needed. (Vote: 10-4)

Assembly Action: None

---

Individual Consideration Agenda

Public Comment 1:

Proponent: John Woestman, Kellen Company, representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com) requests As Modified by This Public Comment.

Further modify as follows:

2018 International Building Code

1010.1.4.6 Control vestibule. Control vestibules shall be permitted in Groups B, F, H, I-1, I-2, M, and S. Where doors in the means of egress are configured as a control vestibule, the door locking system shall provide for emergency egress and shall be subject to approval by the building official. The control vestibule shall comply with all of the following unless otherwise approved based on occupancy and use. A control vestibule in the means of egress shall comply with all of the following.

1. An approved override shall be provided on the egress side of each door of a control vestibule.
2. An approved override shall be provided on the ingress side of the outer door of a control vestibule.
3. Upon activation of the automatic sprinkler system or automatic fire detection system, the interlock function of the door locking system shall deactivate.
4. Upon loss of power to the interlock function of the doors, the interlock function of the door locking system shall deactivate.
5. The egress path from any point shall not pass through more than one control vestibule unless approved by the code official.
6. The door locking system units shall be listed in accordance with UL 294.

Commenter's Reason: To address the committee concern with occupancy groups where control vestibules may be installed. Proposing control vestibules to be permitted Group B for banks and laboratories. Group F for factories. Group H for operations where contamination or atmospheric control is vital. Groups I-1 and I-2 to facilitate patient care and patient security. Group M for sales rooms for jewelry, gems, drugs, and similar highly valuable items. Group S for storage of valuables.

To address the committee concern with activation of automatic sprinkler system or automatic fire detection system in Item 3 where one or both of these systems are provided.

And, to address concerns from stakeholders regarding needed flexibility, proposing revision to the charging language. For example, where casinos count money, accepted industry practices may not incorporate all of the requirements of Items 1 through 5 but may incorporate significant other security and safety provisions.

Note: a control vestibule is different than a sallyport, which is defined in the IBC and permitted in Group I-3 occupancies. Group I-3 includes correction centers, detention centers, jails, prisons, and similar uses. A sallyport is a security vestibule which prevents unobstructed passage. A control vestibule is intended to allow unobstructed passage, but prevents more than one door of doors in series to be open at the same time.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. Control vestibules are currently not addressed in the code. Today, alternative means and methods is the path to allowing control vestibules to be incorporated into buildings.
Where control vestibules are constructed, these requirements may include some locking requirements and interconnectedness currently not incorporated into some control vestibules.

**Public Comment 2:**

**Proponent:** Keith Pardoe, representing Pardoe Consulting, LLC (kpardoe@pardoeconsultingllc.com) requests Disapprove.

**Commenter’s Reason:** I recommend the committee disapprove this proposal for the following reasons:

1) The proposal seeks to create a new type of special locking arrangement for control vestibules, but it neglects to recognize that where such specialized door systems are used they are not the sole means of egress from the controlled space. In other words, a control vestibule serves as the primary entry/exit point for the controlled space—for security and/or environmental control purposes—but they are not sole means of egress, typically. Other exit access doors or exit doors (e.g., stair tower doors) might be equipped with delayed egress locking systems or some form or alarmed exiting system (that permits free egress, but sounds an alarm) that are otherwise restricted (by the owner) to use in emergencies only.

2) The proposal neglects to recognize the security protocols instituted by the facility that might require persons entering these spaces to present some form of credential (e.g., proximity card, keypad, etc.) to enter such controlled spaces. Nor, does the proposal recognize that the persons occupying these spaces are trained and authorized to perform work in whatever conditions are within these spaces. In other words, only persons who are trained, authorized, and familiar with all safety protocols, including how to exit under emergency conditions, are permitted in these spaces; the general public cannot unknowingly wander into these spaces.

3) Each of the door assemblies used as part of a control vestibule system are already required to comply with one of the following sections: 1010.1.9.7, 1010.1.9.8, 1010.1.9.9, and 1010.1.10. Where these doors are required to be fire rated, they are tied into other building systems. The difference is this case is that the doors are designed to work in sequence as a system. Each control vestibule arrangement is unique to the nature of the controlled space to which it serves, and persons using these spaces. The prescribed conditions in the proposal might not be sufficient for certain applications, and might cause breaches in the facility's protocols in other cases.

4) The proposal does not limit the application of control vestibules to only certain occupancy groups, instead it places the responsibility for determining where such special locking arrangements might be used on the shoulders of the building code officials. Because control vestibules are a special locking arrangement, the code should restrict their use to specific occupancy groups.

5) The proposal does not include technical justification for adding this type of special locking arrange to the code at this time. Nor, does the proposal cite specific points of confusion from building code officials or owners.

In my opinion, this proposal premature and needs further work before it can be considered appropriate to add to the code. Currently, when such specialized systems are used, they are reviewed and approved by the applicable building code officials on a case by case basis. For this reason alone, it is unnecessary for the code to address such specialized systems.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction

Disapproving this proposal will not have a cost impact.
Proposed Change as Submitted

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@iccsafe.org)

2018 International Building Code
Add new text as follows

1010.1.9 Vestibules. Where required by a compliance path of the International Energy Conservation Code, building entrances shall be provided with vestibules.

Reason: The IECC requires vestibules to be provided at building entrances in all climate zones other than 1 and 2. In the design of buildings this can be a significant feature of entrances. The requirement can be overlooked by designers if they focus on the IBC during initial design and then are perhaps surprised by the requirement when adding the IECC to their construction documents. This proposal provides a direct reference to the compliance paths in the IECC for vestibules.

The proposal puts the reference for vestibules in Chapter 10 after the section for door arrangements (Section 1010.1.8). Since Section 1010.1.8 addresses doors in a series, this is the most logical place for designers to understand that a vestibule may be required by the IECC.

The BCAC developed this proposal with the SEHPCAC. This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

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

This requirement already exists in the IECC. Inclusions in the IBC doesn’t result in any construction not already anticipated.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: This pointer for vestibules is not needed in IBC in areas where the Energy codes are adopted because it is already covered in the Energy Code. The term ‘vestibule’ could be confused with stairway vestibules. (Vote: 12-2)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:
Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc safe.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.9 Vestibules. Where in jurisdictions that have adopted the International Energy Conservation Code, where required by a compliance path of the International Energy Conservation Code, building entrances shall be provided with vestibules.

Commenter's Reason: Unlike the IBC, the requirement in the IECC is a mandate for a building to have vestibules at most entrance doors. If a designer is unaware of this requirement, adding a vestibule, or in some cases several vestibules, into the design of a building after it has been through plan review can be a cause some major revisions to the building configuration.

The language being proposed is not in any way intended to mandate that a community must use the International Energy Conservation Code (IECC), but rather it is intended to give designers in those communities where the IECC is adopted, that vestibules may be required. The text below indicates the extent of the requirement.

C402.5.7 Vestibules. Building entrances shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. The installation of one or more revolving doors in the building entrance shall not eliminate the requirement that a vestibule be provided on any doors adjacent to revolving doors.

Exceptions: Vestibules are not required for the following:


2. Doors not intended to be used by the public, such as doors to mechanical or electrical equipment rooms, or intended solely for employee use.

3. Doors opening directly from a sleeping unit or dwelling unit.

4. Doors that open directly from a space less than 3,000 square feet (298 m2) in area.

5. Revolving doors.

6. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

7. Doors that have an air curtain with a velocity of not less than 6.56 feet per second (2 m/s) at the floor that have been tested in accordance with ANSI/AMCA 220 and installed in accordance with the manufacturer’s instructions. Manual or automatic controls shall be provided that will operate the air curtain with the opening and closing of the door. Air curtains and their controls shall comply with Section C408.2.3

In addition, the requirement in the IECC for vestibules is mirrored in ANSI/ASHRAE/IESNA 90.1, which is one of the compliance means the IECC allows for a commercial building (IECC – Commercial Provisions, Section C401.2)
With regard to the comment made by the IBC General Code Development Committee that “The term ‘vestibule’ could be confused with stairway vestibules.” As the term is not defined in any of the I-Codes, we must refer to the generally accepted term. The Merriam Webster dictionary defines a vestibule as “An antechamber, hall, or lobby next to the outer door of a building.” The term “vestibule,” while used in IBC Section 1028.1 is not always and only associated with a space into which an exit stair discharges, there are many architectural spaces in a building that are generically called vestibules.

This change will provide one additional aspect of coordination of the ICC model codes package for use by all designers and building officials where appropriate. We urge your overturning the Code Committee’s recommendation and approve this change.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
This requirement already exists in the IECC. Inclusions in the IBC doesn’t result in any construction not already anticipated.

**Public Comment 2:**

**Proponent:** Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com) requests As Submitted.

**Commenter’s Reason:** This is a necessary correlation between two codes. The vestibule is a building requirement based on specific conditions cited within the IEEC. It is a necessary building component. Referring to another code for this is no different that referring to the IPC for plumbing fixture requirements. Given the choice between copying the requirements from the IEEC or referencing the code, this is the superior option.

There should be no confusion regarding what type of vestibule this is because it is clearly described in the IEEC.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
This is a pointer to a code requirement that is often missed by designers and does not change any existing requirement.

**Public Comment 3:**

**Proponent:** David Collins, representing The American Institute of Architects (dcollins@preview-group.com) requests As Submitted.

**Commenter’s Reason:** There really should not be any confusion on this topic as there are no requirements in the 2018 IBC that mandate the installation of vestibules - of any kind. The incorporation of vestibules is solely a designer’s choice. But WHEN a designer chooses to incorporate vestibules into a building, there are regulations, but only two; one that has its basis in the accessibility of doors in series and one for exit stairways that discharge into a vestibule which then leads to the exterior:

- **1010.1.8 Door arrangement:** which mandates a there be minimum distance between doors when located in series – an enclosure often called out on plans as a “vestibule.”
- **Section 1028.1, Exception 2 Exit discharge:** which mandates the construction and size of a vestibule when an exit stair discharges into it.

Unlike the IBC, the requirement in the IECC is a mandate for a building to have vestibules at all entrance doors. Sadly in many cases, it is only after a set of plans has been submitted to the community for review (and who has adopted the IECC) does a designer find out that their building is required have vestibules at the entrance doors. Adding a vestibule, or in some cases several vestibules, into the design of a building after it has been through plan review can be a considerable chore on the part of designer, often forcing them to make some major revisions to the building configuration. Even worse is when the plan review fails to catch the need for a vestibule and the error it attempted to be corrected in the field.

The language being proposed is not in any way intended to mandate that a community must use the *International Energy Conservation Code* (IECC), but rather it is intended to give designers in those communities where the IECC is adopted, and in some cases the AHJ, a reminder that if the IECC has been adopted, then vestibules may be required. The need for this “pointer” to the IECC may not be so important if the IECC only required a single vestibule at the main entry door to a building, but for those of you who may not be familiar with the requirements of the 2018 IECC, the requirement is for a vestibule at **all** “building entrances,” not just for the “main” entry door (IECC – Commercial Provisions, Section C402.5.7).

Simply put - the requirement for a vestibule is applicable to any door in a building that is an “entrance,” including those doors that are used as a delivery entrance, the staff/employee entrance, and even to those that are just convenience entry points into a building.

**C402.5.7 Vestibules.** Building entrances shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. The installation of one or more revolving doors in
the building entrance shall not eliminate the requirement that a vestibule be provided on any doors adjacent to revolving doors.

**Exceptions:** Vestibules are not required for the following:


2. Doors not intended to be used by the public, such as doors to mechanical or electrical equipment rooms, or intended solely for employee use.

3. Doors opening directly from a sleeping unit or dwelling unit.

4. Doors that open directly from a space less than 3,000 square feet (298 m²) in area.

5. Revolving doors.

6. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

7. Doors that have an air curtain with a velocity of not less than 6.56 feet per second (2 m/s) at the floor that have been tested in accordance with ANSI/AMCA 220 and installed in accordance with the manufacturer’s instructions. Manual or automatic controls shall be provided that will operate the air curtain with the opening and closing of the door. Air curtains and their controls shall comply with Section C408.2.3

In addition, the requirement in the IECC for vestibules is mirrored in ANSI/ASHRAE/IESNA 90.1, which is one of the compliance means the IECC allows for a commercial building (IECC – Commercial Provisions, Section C401.2).

With regard to the comment made by the IBC General Code Development Committee that “The term ‘vestibule’ could be confused with stairway vestibules.” We do not disagree that the term “vestibule” is used in the IBC, but as the term is not defined in any of the I-Codes, we must refer to the generally accepted term, as specified in Chapter 2 of each I-Code. The Merriam Webster dictionary defines a vestibule as “An antechamber, hall, or lobby next to the outer door of a building.” The term “vestibule,” while used in IBC Section 1028.1 is not always and only associated with a space into which an exit stair discharges, there are many architectural spaces in a building that are generically called vestibules.

The AIA firmly believes that implementation of the criteria in the IECC is paramount to good design. Several of the Institutes’ policies call for increased energy efficiencies though the application of “Comprehensive, Coordinated and Contemporary Codes.” This change will provide one additional aspect of coordination of the ICC model codes package for use by all designers and building officials where appropriate. We urge your overturning the Code Committee’s recommendation and approve this change.

**Cost Impact:** The net effect of the public comment and code change proposal will decrease the cost of construction if the design fails to include a vestibule it is a costly matter to add it at plan review. If plan review fails to catch the need for a vestibule, it is costly to try to resolve it in the field. If neither the design or the review catches the omission, then the loss is even larger to the building owner who now must pay for the energy loss attributed to a feature that should have been integrated into the building.
Proposed Change as Submitted

Proponent: John Williams, Chair, representing Healthcare Committee (AHC@iccsafe.org)

2018 International Building Code
Revise as follows

1010.1.9.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

1. Places of detention or restraint.
2. In Group I-1 Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by clinical staff at all times or clinical staff have the codes or other means necessary to operate the locks at all times.
3.2 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 door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:

   3.1.2.1 The locking device is readily distinguishable as locked.
   3.2.2.2 A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.
   3.3.2.4 The use of the key-operated locking device is revocable by the building official for due cause.
4. 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 does not have a doorknob or surface-mounted hardware.
5. 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.
6. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
7. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.

Reason: This manual locking provision recognizes what is currently permitted under the Federal Standards and Centers for Medicaid and Medicare Services enforcement rules where the restraint of patients is allowed for the safety of the patient and/or the public (K222). This may be needed as part of the progression of treatment for patients. This proposal is submitted by the ICC Committee on Healthcare (CHC). The CHC was established by the ICC Board to evaluate and assess contemporary code issues relating to healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. In 2017 the CHC held 2 open meetings and numerous conference calls

Cost Impact: The code change proposal will not increase or decrease the cost of construction As a permitted condition the cost impact only occurs if the option is exercised.
Public Hearing Results

Committee Action: As Submitted
Committee Reason: The new Item 2 address security and dementia wandering issues for care recipients in assisted living, hospitals and nursing facilities where this is needed. It was suggested to provide a public comment to have keys for ‘all’ clinical staff. (Vote: 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:
Proponent: John Williams, representing Healthcare Committee (ahc@iccsafe.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.9.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

1. Places of detention or restraint.
2. In Group I-1 Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.
3. 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 door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
   3.1. The locking device is readily distinguishable as locked.
   3.2. A readily visible durable sign is posted on the egress side or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.
   3.3. The use of the key-operated locking device is revocable by the building official for due cause.
4. 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 does not have a doorknob or surface-mounted hardware.
5. 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.
6. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
7. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.

Commenter’s Reason: This proposal is in response to suggestion from the Means of Egress Code Development Committee to ensure that all clinical staff will have keys.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.
This proposal is in response to suggestion from the Means of Egress Code Development Committee to ensure that all clinical staff will have keys.

Public Comment 2:
Proponent: Crystal Sujeski, representing Crystal Sujeski (crystal.sujeski@fire.ca.gov) requests Disapprove.
Commenter's Reason: Allowing locking of doors in I-1 condition 2 and I-2 occupancies without increasing safe guards for fire and life safety protections in chapter 4 has unintended consequences. When you lock persons in a space they are retrained, this creates an I-3 environment. Other safe guards should be considered before allowing any staff to detain any persons. Also, who is the decision maker of what is a security threat? Further study and correlation with I-3 regulations should be considered before approval for these occupancies.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

The net effect will not increase or decrease the cost of construction.
Proposed Change as Submitted

Proponent: Lee Kranz, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov)

2018 International Building Code
Revise as follows

1010.1.9.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

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 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 THIS SPACE 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 revocable 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 does not have a 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. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
6. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.
7. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:
   7.1. The maximum occupant load shall be posted where required by Section 1004.9. Such sign shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.
   7.2. A weatherproof telephone or two-way communication system installed in accordance with Sections 1009.8.1 and 1009.8.2 shall be located adjacent to not less than one required exit access door on the exterior side.
   7.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.
   7.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m²) sq. ft. in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.
   7.5. A readily visible durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating: THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED. The letters on the sign shall be not less than 1" high on a contrasting background.
8. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.
9. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet or less serving a private office space.
1010.1.10 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.4, Item 2.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.1.9.9 or 1010.1.9.10.
3. Exit access doors serving occupied exterior areas shall be permitted to be locked in accordance with Section 1010.1.9.4, Item 7.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

2018 International Fire Code

1031.8 Inspection, testing and maintenance. Two-way communication systems for areas of refuge shall be inspected and tested on a yearly basis to verify that all components are operational. Where required, the tests shall be conducted in the presence of the fire code official. Records of inspection, testing and maintenance shall be maintained.

Reason: IBC Section 1004.7 requires an unobstructed path of egress from outdoor areas where single or multiple paths of egress travel are required to pass back through the building. Currently egress doors serving outdoor areas are not permitted to have locks. For security purposes, building owners and tenants install locks on required egress doors from these areas in violation of the code. Many building officials and fire officials allow locks and latches on doors serving the outdoor areas using the modification provisions of Sections 104.10 & 104.11. Since installation of locks on egress doors occurs on a regular basis it makes sense to provide a safe, reasonable and consistent standard to follow for the safety of people occupying outdoor areas who must re-enter the building for egress. Additional safety is provided by requiring a two-way communication system, allowing occupants to call for help if the egress door is accidently locked. Two-way communication system requirements are currently found in IBC Section 1009.8.1 & 1009.8.2.

The sketch below illustrates an occupied exterior deck where occupants must egress through the building to reach the exit discharge. The deck shown is on the 3rd story of the building where the installation of an exterior stairway is not practical. The owner has requested to install security locks on the exit access doors but IBC Section 1004.5 clearly requires that occupants be able to egress from the deck at all times. This proposal would allow the doors to be locked if the specified safety measures are met.
IFC Section 1030.8 - If this proposal passes, the two-way communication system needs to be tested and maintained. The IFC language is currently only for systems in areas of refuge.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. It is hard to say if this code change will increase or decrease the cost of construction. Compliance with the proposed conditions of approval (2-way communication device, vision glass, signage, etc) would increase costs but many of these improvements are being required as a result of alternate means and methods of construction requirements that occur when violations are discovered by Fire Prevention Officers after the C of O is issued. In those cases the cost to make these improvements will be higher than if they had been made during the initial construction of the building.
Public Hearing Results

Errata: Items 7, 8 and 9 are all new text and should be underlined.

Committee Action: Disapproved

Committee Reason: There should be a maximum occupant load for where this should be permitted as an option. It was suggested that an over ride should be available to unlock the doors, but other committee members felt that this would be a security issues for buildings where someone could use this to break into a building during off hours. (Vote: 10-4)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Lee Kranz, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov); Jonathan Siu (jon.siu@seattle.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.9.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:
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 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 THIS SPACE 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 revocable 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 does not have a 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. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
6. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.
7. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:
   7.1. The maximum occupant load shall be posted where required by Section 1004.9. Such sign shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.
   7.2. A weatherproof telephone or two-way communication system installed in accordance with Sections 1009.8.1 and 1009.8.2 shall be located adjacent to not less than one required exit access door on the exterior side.
   7.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.
   7.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m²) sq. ft. in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.
   7.5. A readily visible durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating: THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED. The letters on the sign shall be not less than 1 inch (25 mm) high on a contrasting background.
   7.6. The occupant load of the occupied exterior area shall not exceed 300 in accordance with Section 1004.
8. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.
9. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet or less, serving a private office space.

**Commenter's Reason:** Outdoor occupied areas where occupants must re-enter the building to egress are considered by the current code to be the same as any room inside the building which means that unobstructed egress must be available from the outdoor area at all times. There currently are no exceptions to this rule but it is not unusual for these doors to have locks placed on them for security purposes after the C of O is issued. Locking these doors creates the potential for people to get locked out with no way to safely egress through the building in an emergency until rescued. Most of the violations we find take place on upper level decks and occupied roofs where there isn't access to an exterior stair. We also find locks on doors serving grade-level outdoor areas where one or more of the required exit doors go through the building. It's understandable why owners put locks on these exterior required egress doors but we know it's not allowed in the current code and most owners do not get a permit to install the locks. When a permit is issued locks for these egress doors are typically approved as an alternate using most or all of the requirements in this proposal so it's clear that this exception is needed in the code.

At the Committee Action Hearings in Columbus, the Means of Egress Committee agreed that this change was needed in the code but had reservations about approving it without limiting the occupant load of the exterior area. This public comment modifies the original proposal to limit the occupant load of the outdoor area to 300 or less which is the same as Section 1010.1.9.4, #2 for Group A occupancies. This constitutes the "baby steps" that was suggested by one of the Committee members.

The remainder of the proposal is unchanged.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

It is hard to say if this code change will increase or decrease the cost of construction. Compliance with the proposed
conditions of approval (2-way communication device, vision glass, signage, etc) would increase costs but many of these improvements are being required as a result of alternate means and methods of construction requirements that occur when violations are discovered by Fire Prevention Officers after the C of O is issued. In those cases the cost to make these improvements will be higher than if they had been made during the initial construction of the building.
Proposed Change as Submitted

Proponent: Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

2018 International Building Code

Revise as follows

1010.1.9.8 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907.

2. Group E classrooms with an occupant load of less than 50.

Exception: Delayed

3. In a courthouse, delayed egress locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, serving a Group A-3 courtroom in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

1010.1.10 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.4, Item 2.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.1.9.9 or 1010.1.9.10.
3. Courtrooms shall be permitted to be locked in accordance with Section 1010.1.9.8, Item 3.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

Reason: This is only a format issue resulting from the multiple changes last cycle to the delayed egress locks - E66-15 AMPC1, E68-15 AM/AMPC1, E69-15 AS. The allowance for courtrooms, while logical, is out of place as an exception to Items 1 and 2 in Section 1010.1.9.8. Correlation with Section 1010.1.9.8 in Section 1010.1.10 is needed because this is Group A where panic hardware is otherwise required.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

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

This is a format revision with no change to technical criteria.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: While it is appropriate to make the exception a third item, courtrooms are found in both office buildings (Group B) and courthouses (Group A-3). The proposal should be brought back with a public comment to address this issue. (Vote 13-1)

Assembly Action: None

 Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc.safe.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.9.8 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907.

2. Group E classrooms with an occupant load of less than 50.
3. In a courthouse, courtrooms in Group A-3 and B occupancies, delayed egress locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, serving a Group A-3 courtroom in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

Commenter's Reason: This allowance is already permitted with the current text. The original proposal was editorial only. The modification is because courtrooms can occur in government office buildings, such as traffic court. The same security concerns exist in all courtrooms, so it is appropriate to include these facilities in the proposal. Unlike Section 1010.1.9.8, the new language in 1010.1.10 is a reference only, so no further revisions are needed.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This is a format revision with no change to technical criteria.

Public Comment 2:

Proponent: Crystal Sujeski, representing Crystal Sujeski (crystal.sujeski@fire.ca.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1010.1.9.8 Delayed egress. Delayed egress locking systems shall be permitted to be installed on doors serving the following occupancies in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907.
2. Group E classrooms with an occupant load of less than 50.
3. In a courthouse, Group A courthouses and court services within a Group B occupancy, delayed egress locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, serving a Group A-3 courtroom in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

**Commenter’s Reason:** The following modification has been proposed to E58-18 to clarify that courtrooms are not a B occupancy but there can be court services within a B occupancy building and shall be permitted to have delayed egress.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.
There will no cost effect
Proposed Change as Submitted

Proponent: John Woestman, Kellen Co., representing Builders Hardware Manufacturers Association (BHMA)
(jwoestman@kellencompany.com)

2018 International Building Code
Revise as follows

1010.1.9.8.1 Delayed egress locking system. The delayed egress locking system shall be installed and operated in accordance with all of the following:

1. The delay electronics of the delayed egress locking system shall deactivate upon actuation of the automatic sprinkler system or automatic fire detection system, allowing immediate free egress.
2. The delay electronics of the delayed egress locking system shall deactivate upon loss of power controlling the lock or lock mechanism, allowing immediate free egress.
3. The delayed egress locking system shall have the capability of being deactivated at the fire command center and other approved locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay electronics have been deactivated, rearming the delay electronics shall be by manual means only.

Exception: Where approved, a delay of not more than 30 seconds is permitted on a delayed egress door.

5. The egress path from any point shall not pass through more than one delayed egress locking system.

Exceptions:

1. In Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds.
2. In Group I-1 or I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30 seconds and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware:

6.1. For doors that swing in the direction of egress, the sign shall read: PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
6.2. For doors that swing in the opposite direction of egress, the sign shall read: PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS.
6.3. The sign shall comply with the visual character requirements in ICC A117.1.

Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.

7. Emergency lighting shall be provided on the egress side of the door.
8. The delayed egress locking system units shall be listed in accordance with UL 294.
9. The delayed egress locking system shall comply with ANSI/BHMA A156.24.

Add new standard(s) follows

BHMA

ANSI/BHMA A156.24-2018:
**Reason:** Delayed egress locking systems are a device, or a combination of devices, arranged to be locked in the direction of egress travel, and are intended to temporarily delay the egress of occupants. Over the last two cycles of the IBC, delayed egress locking systems have been permitted in new occupancy groups and in some instances more than one delayed egress locking system is permitted in the egress path. These provisions were allowed in light of the increased need for security in E and I occupancies, as well as courtroom buildings.

In addition to the increase in allowed application of delayed egress, since 2012 the Code has evolved to recognize use of a ‘delayed egress locking system’ which is comprised of not just mechanical but electro-mechanical and electro-magnetic locking systems.

In light of the increased occupancy group allowance and application of more than one delayed egress locking system in the path of egress, requiring compliance to BHMA A156.24 Delayed Egress Locking Systems helps assure these locking systems will function reliably and as intended by the Code.

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

Requiring delayed egress door locking hardware to comply with ANSI/BHMA A156.24 could be expected to increase the cost of the door hardware. But, recall that delayed egress locking systems are entirely optional (shall be permitted) and are not required by the IBC. Thus, the cost of construction may increase only where delayed egress locking systems are desired.

Also, many delayed egress door locking products are currently on the market today. Currently, the UL online certification directory for “Special Locking Arrangements” contains 23 unique files (23 manufacturers) in category code FWAX – Special Locking Arrangements – with over 100 product models listed for these applications. UL category FWAX includes many products for delayed egress door locking applications.

**Analysis:** A review of the standard proposed for inclusion in the code, ANSI/BMHA A156.24-2018, with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2018.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: The proposal was disapproved because the requirements delayed egress locking system should be in the code, not in a referenced standard. (Vote 9-5)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: John Woestman, Kellen Company, representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com) requests As Submitted.

Commenter’s Reason: Addressing the committee reason for disapproval: we agree, requirements for delayed egress locking systems should be in the code. And they are. The proposed reference standard complements code requirements with technical requirements for operational testing, durability, and reliability to help ensure these delayed egress locking systems perform as expected.

Over the last two cycles of the IBC, delayed egress locking systems have been permitted in new occupancy groups and in some instances more than one delayed egress locking system is permitted in the egress path. These provisions were allowed in light of the increased need for security in E and I occupancies, as well as courtroom buildings. In addition to the increase in allowed application of delayed egress, since 2012 the Code has evolved to recognize use of a ‘delayed egress locking system’ which is comprised of not just mechanical but electro-mechanical and electromagnetic locking systems.

Requiring compliance to BHMA A156.24 Delayed Egress Locking Systems helps assure these locking systems will function reliably and as intended by the Code.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction

Requiring delayed egress door locking hardware to comply with ANSI/BHMA A156.24 could be expected to increase the cost of the door hardware. But, recall that delayed egress locking systems are entirely optional (shall be permitted) and are not required by the IBC. Thus, the cost of construction may increase only where delayed egress locking systems are desired. Also, many delayed egress door locking products are currently on the market today. Currently, the UL online certification directory for Special Locking Arrangements contains 23 unique files (23 manufacturers) in category code FWAX Special Locking Arrangements with over 100 product models listed for these applications. UL category FWAX includes many products for delayed egress door locking applications.
Proposed Change as Submitted

Proponent: John Woestman, Kellen Co., representing Builders Hardware Manufacturers Association (BHMA)  
(jwoestman@kellencompany.com)

2018 International Building Code
Revise as follows

1010.1.9.12 Stairway doors. Interior stairway means of egress doors shall be openable from both sides without the use of a key or special knowledge or effort.

Exceptions:

1. Stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side.
2. This section shall not apply to doors arranged in accordance with Section 403.5.3.
3. Stairway exit doors are permitted to be locked from the side opposite the egress side, provided that they are openable from the egress side and capable of being unlocked simultaneously without unlatching upon a signal from the fire command center, if present, or a signal by emergency personnel from a single location inside the main entrance to the building. The door locking system units shall be listed in accordance with UL 294.
4. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group B, F, M and S occupancies where the only interior access to the tenant space is from a single exit stairway where permitted in Section 1006.3.3.
5. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group R-2 occupancies where the only interior access to the dwelling unit is from a single exit stairway where permitted in Section 1006.3.3.

Reason: Locks which are capable of being unlocked upon a signal from the fire command center (if present) or by a signal by emergency personnel from a single location inside the main entrance to the building would have to be electrified locks controlled by an electrical locking system. Consistent with other electrical locks and locking systems in the means of egress in Sections 1010.1.9.7 through 1010.1.9.10 (controlled egress doors, delayed egress doors, and electrically locked egress doors), it is appropriate to require these locking system units installed on stairway doors to be listed in accordance with UL 294.

Cost Impact: The code change proposal will increase the cost of construction
Explanation: The same locking devices available and used for the locks in Sections 1010.1.9.7 through 1010.1.9.10 (controlled egress doors, delayed egress doors, and electrically locked egress doors) would likely be used for stairway doors. These locks and locking systems are currently required by the code to be listed in accordance with UL 294 which does add to the cost of the product. However, Exception 3, where the new requirement is proposed is a “shall be permitted” provision, and only where this exception is voluntarily implemented would the potential cost increase be realized.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: There has been no justification, data or issue identified that would require UL listing for these stairway doors. These type of doors unlock with the loss of power. Adding the UL listing would increase the cost. (Vote 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: John Woestman, Kellen Company, representing Builders Hardware Manufacturers Association (BHMA) (jwoestman@kellencompany.com) requests As Submitted.

Commenter's Reason: Section 1010.1.9.12 requires interior stairway means of egress doors to be openable from both sides without the use of a key or special knowledge or effort to facilitate entrance into the stairway, and to facilitate leaving the stairway, should that be necessary during egress. Exception 3 allows these stairways doors to be electrically locked from the stairway side (the side opposite egress) but must be unlockable electrically from the fire command center or by emergency personnel. Thus, the reliable operation of these electrical locks may be very important in egress situations.

Consistent with the current requirements for all electrical locking systems in the means of egress (see Sections 1010.1.9.7, 1010.1.9.8, 1010.1.9.9, and 1010.1.9.10), this proposal recommends requiring these electrical locking system units to be listed to UL 294

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction Explanation: The same locking devices available and used for the locks in Sections 1010.1.9.7 through 1010.1.9.10 (controlled egress doors, delayed egress doors, and electrically locked egress doors) would likely be used for stairway egress doors. These locks and locking systems are currently required by the code to be listed in accordance with UL 294 which does add to the cost of the product. However, Exception 3, where the new requirement is proposed is a shall be permitted provision, and only where this exception is voluntarily implemented would the potential cost increase be realized.
Proposed Change as Submitted

Proponent: Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

2018 International Building Code

Revise as follows

1010.10 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.

Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.1.9.4, Item 2.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.1.9.9 or 1010.1.9.10.

Electrical rooms with equipment rated 1,200 amperes or more and over 6 feet (1829 mm) wide, and that contain overcurrent devices, switching devices or control devices with exit or exit access doors, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

Add new text as follows

1010.1.10.1 Rooms with electrical equipment. Exit or exit access doors serving transformer vaults, rooms designated for batteries or energy storage systems, or modular data centers shall be equipped with panic hardware or fire exit hardware. Where rooms contain electrical rooms with equipment rated 800 amperes or more that contain overcurrent devices, switching devices or control devices and where the exit or exit access door is less than 25 feet from the equipment working space, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

Reason: The current requirements in the International Building Code are not in alignment with the requirements in NFPA 70, the National Electrical Code. Section 110.26(C)(3) requires where there are exit or exit access doors serving a room with electrical equipment rated 800 amperes or more those doors shall be equipped with listed panic hardware. Equipment rated 1200 amperes or more is used to determine the number and locations of exits or exit access doorways, which is addressed in Section 1006.2.2. Also, NFPA 70 for transformer vaults (in Sections 230.8.1.2 and 230.8.1.3) requires the use of listed panic hardware.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

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

Chapter 27 of the IBC already requires electrical installations to comply with the provisions of NFPA 70. This proposal aligns the requirements in the IBC with NFPA 70.
Committee Action: As Modified

Committee Modification: 1010.1.10.1 Rooms with electrical equipment. Exit or exit access doors serving transformer vaults, rooms designated for batteries or energy storage systems, or modular data centers shall be equipped with panic hardware or fire exit hardware. Where rooms contain electrical rooms with equipment rated 800 amperes or more that contain overcurrent devices, switching devices or control devices and where the exit or exit access door is less than 25 feet from the equipment working space, shall be equipped with panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

Committee Reason: By adding travel distance, the modification did add a missing part for coordination with the National Electrical Code. However, there is concern on if ‘equipment work space’ would be understood and how the distance should be measured.

This proposal would coordinate with the committee action on E17-18. The terms for what types of rooms are addressed is in the National Electrical Code, so which rooms should be understood. It was suggested that perhaps the NEC references in E17-18 should also be added into this section in a public comment. (Vote 10-3)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc safe.org) requests As Modified by This Public Comment.

Further modify as follows:

2018 International Building Code

1010.1.10.1 Rooms with electrical equipment. Exit or exit access doors serving transformer vaults, rooms designated for batteries or energy storage systems, or modular data centers shall be equipped with panic hardware or fire exit hardware. Where rooms contain electrical rooms with equipment rated 800 amperes or more and that contain overcurrent devices, switching devices or control devices and where the exit or exit access door is less than 25 feet from the equipment working space as required by NFPA 70, shall be equipped with such doors shall not be provided with a latch or lock other than panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

Commenter’s Reason: The change at the beginning of the sentence is editorial for better English. To assist the code user regarding the specific requirements for “working space”, a further modification is proposed to reference NFPA 70, which contains those requirements. Also, clarification is proposed to ensure that no latch or lock is to be provided, other than the panic or fire exit hardware.

To coordinate with E17-18 it is the intent of the BCAC to direct the code user to the new requirements in Section 1006.2.2.4 for electrical rooms. The new Section 1006.2.2.4 directs the code user to the specific sections in NFPA 70 for the working space requirements, including the definition of these spaces. However, reference to this section cannot be made at this time because the section does not exist in the 2018 code.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

Chapter 27 of the IBC already requires electrical installations to comply with the provisions of NFPA 70. This proposal aligns the requirements in the IBC with NFPA 70. Also, the clarification will assist the code user in locating the specific requirements.

E64-18
Proposed Change as Submitted

Proponent: David Cooper, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org)

2018 International Building Code

Revise as follows:

1011.5.5 Nosing and riser profile. Nosings shall have a curvature or bevel of not less than \( \frac{1}{16} \) inch (1.6 mm) but not more than \( \frac{3}{16} \) inch (14.3 mm) from the foremost projection of the tread. Risers shall be solid and vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.52 rad) from the vertical provided the nosing projection is in accordance with Section 1011.5.5.1.

1011.5.5.1 Nosing projection size. The leading edge (nosings) of treads shall project not more than \( 1\frac{1}{4} \) inches (32 mm) beyond the tread below.

Reason: Figure 1 illustrates the sloped riser angle at the minimum riser height and maximum nosing projection. Figure 2 illustrates the sloped riser angle at the maximum riser height and maximum nosing projection. The current language is confusing because it is impossible to slope the riser anywhere close to 30 degrees without greatly exceeding the maximum nosing projection. The proposed change correlates an appropriate limit and clarifies widely misunderstood code language.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This proposal only clarifies the intent of the code and does not change materials or methods.
Committee Action: Disapproved

Committee Reason: The proposal did not consider the idea of a compound slope for the riser. The original intent of the 30 degrees is to avoid a toe catch on the underside of the tread. There was no data provided on this being an issue. (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: David Cooper, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1011.5.5 Nosing and riser profile. Nosings shall have a curvature or bevel of not less than $\frac{1}{16}$ inch (1.6 mm) but not more than $\frac{3}{16}$ inch (14.3 mm) from the foremost projection of the tread. Risers shall be solid and vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.52 rad) from the vertical provided the nosing projection is in accordance with Section 1011.5.5.1.

1011.5.5.1 Nosing projection size. The leading edge (nosings) of treads shall project not more than $1\frac{1}{4}$ inches (32 mm) beyond the tread below.

Commenter’s Reason: This public comment addresses both the committee’s concern and the intent of the proponent. The text deleted from the original proposal has been returned due to the concern for an angular limit on risers with compound slopes however the added text needs to remain.

If the face of the riser is angled at 30 degrees under the tread above unabated, especially at lower riser heights it can create a wedge for the toe of the shoe. I have listed the referenced section, 1011.5.5.1 Nosing projection size, without change to aid understanding. By referencing this section it clarifies that the maximum projection of the nosing over the tread below is not to be exceeded regardless of the angle of the riser.

We request your approval of this public comment to clarify the code and resolve a common misunderstanding.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction This proposal only clarifies the code and will not affect labor or materials related to the cost of construction.
Proposed Change as Submitted

Proponent: David Cooper, Stair Manufacturing and Design Consultants, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org)

2018 International Building Code
Revise as follows

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exception

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1029.
2. At intermediate landings of curved stairways the landing depth shall be measured along the walkline radius between the nosings of the flights adjoining the landing.

Reason: Similar to a straight run stairway with a landing separating two flights aligned in a straight line the paths of travel on the stairway shown in figure 1 is a continuum. This new exception provides needed specification of where to regulate the landing depth. Due to the tapered shape of the landing similar to the treads of the adjoining flights it makes sense to regulate the depth like the treads at the walklines of the flights. This proposal will provide for consistent interpretation and enforcement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. Although the size of these landings are currently open to wide interpretation we feel that this change will not change the cost of construction.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: It is not clear how you would establish a walk line on a curved stairway. The current language for walk lines is only applicable to winder treads. The proposed language is a requirement, not an exception. (Vote 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: David Cooper, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org) requests As Modified by This Public Comment.

Replace as follows:

2018 International Building Code

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exception: Exceptions

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1029.
2. Where curved stairways of constant radius have intermediate landings, the landing depth shall be measured horizontally between the intersection of the walkline of the lower flight at the landing nosing and the intersection of the walkline of the upper flight at the nosing of the lowest tread of the upper flight.

Commenter’s Reason: The committee's misinformed and unfounded reason for disapproval cites that walkline as in section 1011.4 Walkline is only related to winders and not curved stairways. This is simply incorrect. The IBC definition of Winder is, A tread with nonparallel edges.

In fact this means that the treads in a curved stairway with edges that are not parallel are winder treads and are regulated for depth at the walkline. Furthermore the code recognizes this in the first sentence of the Curved stairway section

"1011.9 Curved stairways. Curved stairways with winder treads shall have…"

None of the committee recognized or corrected this misinformation that clearly influenced their discussion and vote.

I have taken the time to rewrite the language to more clearly identify this as an exception to measuring landing depth parallel to the direction of travel as stated in the requirement. This exception further provides needed direction as to where the measurement should be taken on the “pie” shaped landing. Currently where to measure the depth is open to wide interpretation. Winder tread depth is regulated at the walkline so it only seems logical to regulate the landing depth of curved stairways of constant radius between the intersections of the nosings and the walklines of the flights.

I urge you to approve this needed change to allow for consistent interpretation and enforcement of curved stairway landing depth.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction. Certain unnecessary costs arising from rebuilding non-compliant stair structures will be eliminated.
Proposed Change as Submitted

Proponent: David Cooper, Stair Manufacturing and Design Consultants, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org)

2018 International Building Code
Revise as follows

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exceptions:

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1029.
2. The landing at stairway turns of 90 degrees (1.57 rad) or more shall not be required to provide a minimum depth in accordance with this section where the corner of the landing on the outside of the turn in plan has been truncated and the area of the landing provided is not less than that described by an arc with a radius equal to the width of the flight served.

Reason: This proposal simply reiterates the interpretation found in the IBC commentary for more than a decade that has aptly provided guidance to the fact that landings of stairways need not be rectilinear in shape. Truncating the outside corner by rounding or beveling in plan without reduction of the effective width in the path of travel can actually improve compliant use of handrails when continuous handrails are optionally provided at landings by eliminating the need to unnaturally stray from the travel path into the corner to maintain a continuous grip on the handrail. A proposal with similar intent failed in the last cycle because the text was interpreted to allow a wall niche to be added to a landing to meet the minimum area requirement. This proposal clearly describes the condition under which the corner of a landing may be truncated in plan. In this proposal the turn is described as a turn in the “stairway”. By definition landings and flights of stairs compose stairways and thus the term “stairway turns” is appropriate.
Example of 90 degree stairway turn with minimum landing size.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This proposal clarifies the code text to comply with the most common interpretation and will not increase construction costs.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: The new exception 2 is a run on sentence that should be simplified. The phrase “direction of travel” is confusing. The new exception is not needed as this landing shape can be done with current language. Stairway landing commonly have standpipes in the corner without any issues. The proposal does not address what do you do if there turn is less than 90 degrees. (Vote 14-0)

Assembly Action: None

---

Individual Consideration Agenda

Public Comment 1:

Proponent: David Collins, representing The American Institute of Architects (dcollins@preview-group.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exceptions:

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1029.
2. Where a landing at stairway turns of 90 degrees (1.57 rad) or more shall not be required to provide a minimum, the minimum landing depth in accordance with this section where the corner of the landing on the outside of the turn in plan has been truncated and the area of the landing provided is not less than that described by an arc with a radius equal to the width of the flight served.

Commenter’s Reason: The committee rightly suggested that this exception should be rewritten to clearly state what is intended. As noted in the original supporting statement, the commentary on Section 1011.6 specifically states: It is not the intent of this section to require that a stairway landing be shaped as a square or rectangle. A landing turning the stairway 90 degrees (1.57 rad) or more with a curved or segmented outside periphery would be permitted, as long as the landing provides an area described by an arc with a radius equal to the actual stairway width [see Commentary Figure 1011.6(3)]. In this case, the space necessary for means of egress will be available.

The proposed modification will clarify that the landing may be configured to provide the minimum width on a landing by the arc at the minimum width of the stair. Figure 1011.6(3) describes a "reversing run stairway" which is reflected in the proposed code text.

We urge the membership to approve this change as modified by this proposal in order to make the code and the commentary clear.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction. The revised language will clarify how a landing can be configured as discussed in the ICC Commentary on this section of the code. The clarity in the code will simplify design and review and save time and money in the process.

Public Comment 2:

Proponent: William Warlick, representing Salt Lake City Building Services requests As Modified by This Public Comment.
Modify as follows:

2018 International Building Code

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exceptions:

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1029.
2. The landing at stairway turns of 90 degrees (1.57 rad) or more shall not be required to provide a minimum depth in accordance with this section where the corner of the landing on the outside of the turn in plan has been truncated and, provided the area of the landing provided is not less than that described by an arc with a radius equal to truncated area falls outside an arc whose radius equals the width of the flight served and which starts the depth of one tread beyond the riser.

Commenter’s Reason: We are writing in support of the general intent of code change proposal E70-18. In addition, we offer an amendment that clarifies language and offers a more restrictive view of the minimum landing area. We believe this code change would be useful, for example, to allow standpipes, as required in 905.4, to be placed in the outside corners of landings (a common practice that is commonly allowed).

The language is clarified by focusing the definition on limiting the area that may be “truncated” from the basic rectangular landing defined in 1011.6.

The more restrictive view of the minimum landing area is offered because we feel there is a need for a greater dimension in the direction of travel on a stair flight to provide adequate room on the landing for changing gait and changing direction. So, we add to the ‘arc’-defined floor plan an area equal to the another stair tread. We took the dimension of handrail extensions (1014.6) as a model to define this floor space. The figure shows the area outside the arc which may be truncated.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction

Clarification - no cost impact.
Proposed Change as Submitted

Proponent: Don Birdsall, LIFT-U Division of Hogan Mfg., Inc., representing LIFT-U Division of Hogan Mfg., Inc. (donbirdsall@hoganmfg.com)

2018 International Building Code
Revise as follows

1011.11 Handrails. Flights of stairways shall have handrails on each side and shall comply with Section 1014. Where glass is used to provide the handrail, the handrail shall comply with Section 2407.

Exceptions:

1. Flights of stairways within dwelling units and flights of spiral stairways are permitted to have a handrail on one side only.
2. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require handrails.
3. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require handrails.
4. Changes in room elevations of three or fewer risers within dwelling units and sleeping units in Group R-2 and R-3 do not require handrails.
5. Where a platform lift in the park position is accessed by a stairway with two or fewer risers, handrails are not required where handholds are provided that comply with the following:
   5.1 Handholds are provided on each side of the top landing.
   5.2. Handholds are provided vertically or horizontally with gripping surfaces 34 inches (864mm) high minimum and 42 inches (1066 mm) high maximum above the bottom landing.
   5.3. Handholds shall comply with the graspability provisions for handrails and have a length of not less than 4.5 inches (144 mm).

Reason: The primary intent of this new exception is to provide a safe alternative for a limited situation at platform lifts used to access small raised areas. Because of the movement of the lift, standard set handrails will not work. However, typically these lifts are surrounded by short walls that can serve as handholds for someone to grab to stop a possible fall. This condition frequently exists when a wheelchair lift is installed in a courtroom to provide access to the witness stand and judges’ bench. The lift platform is the floor of the Witness Stand. The platform at the entrance to the Witness Stand is commonly parked at a height requiring a step to enter. The Witness Stand is surrounded by millwork low walls. A similar condition can exist in government meeting rooms, churches, and academic buildings. Section 1011.11 requires two handrails starting at a one riser stairway. The addition of handrails interferes with the vertical travel of the platform lift. The judges’ bench and often the witness stand are required to be elevated for safety and court function. A platform lift is required to make these areas accessible by both the ADA and the IBC.

This additional exception provides and describes handholds for this limited situation that assist the person walking up and down the steps and do not interfere with the platform lift operation for persons with mobility issues.
Video of situation: https://hoganmfg.sharefile.com/d-s7519e8a5a7148c48

**Bibliography:**
- International Building Code 2015

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This revision will have minimal to no impact on the cost of the project and will allow access to the Justice System for all users - motion impaired and ambulatory. A barrier removal facilitation change.
**Public Hearing Results**

**Committee Action:** Disapproved  
**Committee Reason:** This proposal would be a compromise between accessibility and stairway safety requirements for this condition. However, there was a concern about the understanding of the terms “parked position” and “handhold”. What is the length and location of the handhold? It was suggested that “creates a stairway” would be more understandable than “accessed by a stairway.” (Vote 11-3)

**Assembly Action:** None

---

**Individual Consideration Agenda**

**Public Comment 1:**

**Proponent:** Don Birdsall, representing LIFT-U Division of Hogan Mfg., Inc. (donbirdsall@hoganmfg.com) requests As Modified by This Public Comment.

**Replace as follows:**

**2018 International Building Code**

**1011.11 Handrails.** *Flights of stairways* shall have *handrails* on each side and shall comply with Section 1014. Where glass is used to provide the *handrail*, the *handrail* shall comply with Section 2407.

**Exceptions:**

1. Flights of stairways within dwelling units and flights of spiral stairways are permitted to have a handrail on one side only.
2. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require *handrails*.
3. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require *handrails*.
4. Changes in room elevations of three or fewer risers within dwelling units and sleeping units in Group R-2 and R-3 do not require *handrails*.
5. Where a platform lift is in a stationary position and the floor of the platform lift serves as the upper landing of a stairway, handrails shall not be required on the stairway, provided that all of the following criteria are met:
   5.1. The stairway contains no more than two risers.
   5.2. A handhold, positioned horizontally or vertically, is located on one side of the stairway adjacent to the top landing.
   5.3. The handhold is located not less than 34 inches (864 mm) and not more than 42 inches (1066 mm) above the bottom landing of the stairway.
   5.4. The handhold gripping surface complies with Section 1014.3, and is not less than 4.5 inches (144 mm) in length.

**Commenter's Reason:** The Committee agreed that this proposal was reasonable, but need a few clarifications. The revised language clarifies the configuration where the exception would be applicable and better defines where the handhold should be placed.

The reference back to Section 1014.3 specifies the graspability requirements used for handrails to ensure safe use.

**Bibliography:** ASME A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts, 2014 Edition  
**International Building Code 2015**

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This revision will allow a handhold for this application that costs no more than a handrail and will permit the use of the wheelchair lift without interference.
Proposed Change as Submitted

Proponent: Lee Kranz, City of Bellevue, WA, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov)

2018 International Building Code

Revise as follows

1014.1 Where required. Handrails serving flights of stairways, ramps, stepped aisles and ramped aisles shall be adequate in strength and attachment in accordance with Section 1607.8. Handrails required for flights of stairways by Section 1011.11 shall comply with Sections 1014.2 through 1014.9. Handrails required for ramps by Section 1012.8 shall comply with Sections 1014.2 through 1014.8. Handrails for stepped aisles and ramped aisles required by Section 1029.16 shall comply with Sections 1014.2 through 1014.8.

Add new text as follows

1014.9 Reach range. Handrails on the side of stairways shall be located not more than 12 inches (305 mm) laterally outward from the edge of stairway treads.

Revise as follows

1014.9-1014.10 Intermediate handrails. Stairways shall have intermediate handrails located in such a manner that all portions of the stairway minimum width or required capacity are within 30 inches (762 mm) of a handrail. On monumental stairs, handrails shall be located along the most direct path of egress travel.

Reason: Recently I reviewed a stairway design that included a bicycle runnel. Runnels are typically a 15" to 20" wide sloped track that allows a rider to push a bicycle along the side of the stairway while traversing up or down. Currently the code does not limit the maximum distance that a handrail may be located from the edge of the stair treads. The 12" limitation was chosen to allow enough room for runnels while maintaining a comfortable distance for pedestrians to reach the handrail.
**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This change will not affect the cost of construction one way or the other because no additional materials or labor are needed to make the installation.

*SDR - BIKE RUNNEL AND HANDRAIL EXHIBIT*

*GGLO, 02/23/2017*
Public Hearing Results

Committee Action: Disapproved
Committee Reason: If this is just an issue for people carrying bikes down a stairway safely, perhaps this should be limited to exterior stairways only. Any protrusion that moves farther out than the handrail could be a hazard to the pedestrian on the stairways. (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1014.9 Reach range. Handrails. The inner edge of handrails on the side of stairways shall be located not more than 12 inches (305 mm) laterally outward from the further than the outer edge of stairway treads.

Commenter's Reason: During testimony it was discussed that, for safety reasons, the handrail should not be located too far from the side of the stairway. Curiously, no language exists to address what should be provided as a side reach to the handrails. The revised language is consistent with the information provided during testimony.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. The proposed language is only a clarification of the intent.
E79-18

IBC: 1015.4, (IFC[BE] 1015.4)

Proposed Change as Submitted

Proponent: David Cooper, Stair Manufacturing and Design Consultants, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org)

2018 International Building Code

Revise as follows

1015.4 Opening limitations. Required guards shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter from the walking surface to the required guard height.

Exceptions:

1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), guards shall not have openings that allow passage of a sphere 4\(\frac{3}{8}\) inches (111 mm) in diameter.
2. The triangular openings at the open sides of a stair, formed by the riser, tread and bottom rail shall not allow passage of a sphere 6 inches (152 mm) in diameter.
3. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter.
4. In areas that are not open to the public within occupancies in Group I-3, F, H or S, and for alternating tread devices and ships ladders, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter.
5. In assembly seating areas, guards required at the end of aisles in accordance with Section 1029.17.4 shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter 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 that allow passage of a sphere 8 inches (203 mm) in diameter.
6. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, guards on the open sides of stairs shall not have openings that allow passage of a sphere 4\(\frac{3}{8}\) inches (111 mm) in diameter.

Reason: The 4\(\frac{3}{8}\) inch sphere rule for guards on stairs has been working well without issue and has proven to be effective in both IBC residential applications and IRC applications, where the susceptible, very-young children, are far more prevalent than in commercial and public places. A 4" sphere rule requirement for stair guards is an unnecessary and excessive regulation. This change will increase the sphere rule limitation to 4\(\frac{3}{8}\) inches for all stair guards but will not affect other required guards.

Cost Impact: The code change proposal will decrease the cost of construction Fewer balusters or less in-fill material will reduce both material and fabrication costs.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: The original justification for this 4-3/8” was for residential tread sizes. While there were studies showing this spacing would address safety concerns, allowing the 4-3/8” openings for all occupancies seems too broad. (Vote 10-3)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: David Cooper, representing Stairbuilders and Manufacturers Association (SMA) (coderep@stairways.org) requests As Submitted.

Commenter’s Reason: I must emphasize that this proposal does not affect all openings as the committee’s reason for disapproval indicates. This only changes the openings in stair guards in occupancies other than within dwelling units where it is already allowed. This is an area of the code that could be simplified for enforcement. The issue of infants on public and commercial stairways is far less than that in the home where a 4 3/8 inch sphere rule has been the norm for many years in both the IBC and IRC. The 4 3/8 inch sphere rule was adopted because infants are not left alone on stairways and was justified by the work of the Climbable Guard Study Group of the CTC after 3 years devoted to the topics related to guard safety one of which was fall through accidents.

Bibliography: Review of Fall Safety of Children Between the Ages of 18 Months and 4 Years In Relation to Guards and Climbing in the Built Environment, 3720.001_20071204R20080506; Alan Hedge, Ph.D.; Thomas Kenney, P.E.; Phillip Davis, December 4, 2007; Prepared for the the National Ornamental and Miscellaneous Metals Association with peer review https://www.stairways.org/resources/Documents/NOMMA%20Final%20Report%202020080506R.pdf

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction. Fewer balusters in stair guards will save labor and materials.
Proposed Change as Submitted

Proponent: Jim Tidwell, Tidwell Code Consulting, representing Self (jimtidwell@tccfire.com); Jim Graham, Self, representing National Association for Child Window Safety (jgraham@childwindowsafety.org)

2018 International Building Code

Revise as follows

1015.8 Window openings. 1015.8 Window openings. Windows in Group R-2 and R-3 buildings including dwelling units, where the top of the sill of an operable window opening is located less than 36 inches above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Operable windows where the top of the sill of the opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F2006.
2. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
3. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.
4. Operable windows that are provided with window opening control devices that comply with Section 1015.8.1.

Exception: Windows over counters, plumbing fixtures or doors.

Reason: This code change is intended to address the ongoing problem of children climbing onto and falling from windows. According to a report published in the Journal Pediatrics®, Official Journal of the American Academy of Pediatrics, “From 1990 through 2008, an estimated 98,415 children (95% CI: 82 416–114 414 children) were treated in US hospital EDs for injuries attributable to a fall from a window, with an average of 5,180 patients (95% CI: 4828–5531 patients) per year.” This report is the most recent, comprehensive study to date on the problem. There is a viable, inexpensive solution to this problem that has proven effective in the largest city in the United States, New York City. In the mid 1970’s, New York City implemented a program they called “Children Can’t Fly” in an effort to reduce injuries resulting from window falls. A center piece of that effort was a Local Law requiring window guards in every building with three or more apartments where children under 10 resided. Since then, injuries and deaths from window falls have been dramatically reduced. According to Barbara Barlow, MD, Chief of Pediatric Surgery, Harlem Hospital Center, “The 96% decrease in accidental falls from windows since 1979 demonstrates that the “Children Can’t Fly” program in New York City has almost eliminated accidental falls from windows in our hospital population” [quote from report titled “Ten years of experience with falls from a height in children, Barlow B, Niemirska M, Gandhi R, Leblanc W (1983)].

Note that the New York City statute does not stipulate a minimum sill height, as they recognized the fact that children climb on windows; furniture placed near a window can provide a means to climb to the window; and children are inherently curious and will explore areas, such as windows, that have proven dangerous when not properly protected by child window fall protection devices. Using a sill height as a threshold to require fall protection is fallacious because the fall protection is necessary for climbing, exploring children, not just a child who happens to trip and fall near a window.

Also, New York City did not accept limiting devices as a solution. There is another proposal to address this issue separately.

This proposal is simple and straightforward. It removes the reference to a minimum sill height measured inside the room. The current 36” threshold isn’t high enough to prevent many children from accidentally falling from a window even if the child is at floor level. For children climbing on the window or adjacent furniture (a significant portion of the problem), any sill height is simply a way around solving the problem, and will not have the desired effect.

Approving this code change will undoubtedly save thousands of children from serious injuries or death at a very low cost.

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

Increased cost include the addition fall protection for windows not currently required to be equipped with such protection.
Public Hearing Results

Errata: The exception is applicable to the entire section, not just item 4.

**Committee Action:** Disapproved

**Committee Reason:** While preventing falls for children is important, this proposal is too far reaching. This requirement for guards would conflict with emergency escape and rescue opening requirements. Window openings are not more hazardous than drop offs protected by guards – there needs to be some minimum height proposed. No limit on the bottom height of the window is too extensive – as written this would apply to windows at all heights. The fall statistics are based on building stock, not where the new limits are in place. The exception should be addressed in a more comprehensive manner. (Vote 12-2)

**Assembly Action:** None

Individual Consideration Agenda

**Public Comment 1:**

**Proponent:** Jim Tidwell, representing Self (jimtidwell@tccfire.com) requests As Modified by This Public Comment.

Replace as follows:

2018 International Building Code

1015.8 Window openings. Windows in Group R-2 and R-3 buildings including dwelling units, where the top of the sill of an operable window opening is located less than 36 inches above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Operable windows where the top of the sill of the opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F2006.
2. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
3. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.
4. Operable windows that are provided with window opening control devices that comply with Section 1015.8.1.

**Commenter’s Reason:** This public comment is intended to address some of the concerns from the committee. One concern was that the exception was counter to the intent of the change, as children can easily climb on counters and fixtures to get to windows; we agree, and have removed the exception. Another concern was windows that are high on a wall that no one can reach. Our position is that, if a window is so high on a wall that no one can reach it, it should be inoperable; however, if an adult can reach a window, a child can reach that same window by climbing on furniture, toys, or other devices. Operable windows that expose children to falls should be protected with passive window fall protection. The original code change with this comment is intended to address the ongoing problem of children climbing onto and falling from windows.

According to a report published in the Journal Pediatrics®, Official Journal of the American Academy of Pediatrics, “From 1990 through 2008, an estimated 98,415 children (95% CI: 82 416–114 414 children) were treated in US hospital EDs for injuries attributable to a fall from a window, with an average of 5,180 patients (95% CI: 4828–5531 patients) per year.” This report is the most recent, comprehensive study to date on the problem.

There is a viable, inexpensive solution to this problem that has proven effective in the largest city in the United States, New York City. In the mid 1970’s, New York City implemented a program they called “Children Can’t Fly” in an effort to reduce injuries resulting from window falls. A center piece of that effort was a Local Law requiring window guards in every building with three or more apartments where children under 10 resided. Since then, injuries and deaths from window falls have been dramatically reduced. According to Barbara Barlow, MD, Chief of Pediatric Surgery, Harlem Hospital Center, “The 96% decrease in accidental falls from windows since 1979 demonstrates that the “Children Can't Fly” program in New York City has almost eliminated accidental falls from windows in our hospital population” [quote from report titled “Ten years of experience with falls from a height in children, Barlow B, Niemirska M, Gandhi R, Leblanc W (1983)].
Note that the New York City statute does not stipulate a minimum sill height, as they recognized the fact that children climb on windows; furniture placed near a window can provide a means to climb to the window; and children are inherently curious and will explore areas, such as windows, that have proven dangerous when not properly protected by child window fall protection devices. Using a sill height as a threshold to require fall protection is fallacious because the fall protection is necessary for climbing, exploring children, not just a child who happens to trip and fall near a window. The sill height threshold is a significant loophole in the regulations intended to prevent injuries to children falling from windows.

Also, New York City did not accept limiting devices as a solution. There is another proposal to address this issue separately.

This proposal is simple and straightforward. It removes the reference to a minimum sill height measured inside the room. The current 36" threshold isn't high enough to prevent many children from accidentally falling from a window even if the child is at floor level. For children climbing on the window or adjacent furniture (a significant portion of the problem), any sill height is simply a way around solving the problem, and will not have the desired effect.

Approving this code change will undoubtedly save thousands of children from serious injuries or death at a very low cost.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction

- The cost of adding fall protection to windows that present a risk to children is very minor, and will likely be recouped by savings in medical treatment of children who will be prevented from falling from open windows.

**Public Comment 2:**

**Proponent:** Jan Berichon, Randall Children's Hospital, representing self requests As Submitted.

**Commenter's Reason:** I support changing the ICC code changes proposed in E81 and E-82. The code changes that have been submitted to improve child window safety fix loopholes that result in child window falls. This is a companion comment to E-82.

Working in a children's hospital, all too often we treat children that have fallen from windows and see the devastating injuries or deaths repeated year after year.

I support adding passive window fall protection for windows, regardless of sill height, with protection in place that is not easily overridden. Children climb and are innovative, they find ways to access windows by moving items to climb to a window or as a child I worked with recently, climbed up the wall using a nearby built in floor to ceiling cabinet to access the higher window and fell - minimum height requirements will make little to no difference - if a window is accessible by an adult, a child would be able to access the window as well. Children imitate adults.

Improving this code change will prevent thousands of children from serious injury or death. Thank you for your consideration.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction

- The cost of this code change would minimally increase the initial construction cost, however installation of child window fall prevention screens will decrease overall future costs of replacement screens while decreasing medical costs for the treatment of injuries or deaths prevented from potential window falls.

**Public Comment 3:**

**Proponent:** Lisa Dau, Keiki Injury Prevention Coalition, representing Keiki Injury Prevention Coalition (lisa.dau@kapiolani.org) requests As Submitted.

**Commenter's Reason:** I am writing to you in expressing my support to the proposed changes to codes E81-18 relating to child window safety and window fall prevention for children.

I believe there is a gap in the current ICC code that falls short on protection of our children from window falls. This code change addresses the problem of children climbing onto and falling from window. Children climb on window sills, especially when furniture is placed near windows. Children are curious and do not know the dangers of climbing. Regardless of the sill height, if an adult can reach a window opening, so can a child.

I support the proposed ICC changes to E81-18, these changes will prevent serious injuries and deaths of young children from window falls

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction

- The change proposal will increase the cost of the construction, however the added cost for fall protection and prevention to windows that present a risk to children is very minimal as compared the the devastating cost of the death a child, or the high cost of medical and mental health care, that could be easily prevention by supporting this proposed change.
**Public Comment 4:**

**Proponent:** Jim Graham, representing National Association for Child Window Safety  
(jgraham@childwindowsafety.org) requests As Submitted.

**Commenter’s Reason:** The New York City code referenced no sill height and they had a 96% decrease in window falls. The 96% decrease in accidental falls from windows since 1979 demonstrates that the “Children Can’t Fly” program in New York City has almost eliminated accidental falls from windows in our hospital population” [quote from report titled “Ten years of experience with falls from a height in children, Barlow B, Niemiriska M, Gandhi R, Leblanc W (1983)]. Note that the New York City statute does not stipulate a minimum sill height, as they recognized the fact that children climb on windows; climb on furniture, and climb on beds near windows. It has been proven that even 12 and 13 month old babies are capable of climbing on the average couch or bed; and children are inherently curious and anxious to explore their world. From those pieces of furniture, found in every home, they have easy access to windows even higher that 36 inches.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. The code change proposal will modestly increase the cost of construction. Benefit/Cost analysis has demonstrated that very quickly that modest increase in cost will be returned in property management savings. That B/C analysis demonstrated that in multi-unit affordable housing it saved up to 98% of window maintenance cost. And does not include savings on insurance costs due to lessening the exposure due to liability concerns.

**Public Comment 5:**

**Proponent:** Wayne Parsons, Wayne Parsons Law Office, representing Wayne Parsons Law Office  
(wparsons@hawaii.rr.com) requests As Submitted.

**Commenter’s Reason:** I submit this comment in support of proposed ICC code change proposals E81-18 and E82-18 which seek to close loopholes in ICC 1015.8 - Window Openings. I am a lawyer who has spent the last few years studying the issues surrounding child window falls. I was involved in engineering and safety investigations surrounding the death of a 5-year-old boy who fell to his death through a window in a new home. Eighteen other children fell from windows in that same project over a over a three year period. The window fall protection system utilized was a window-opening limiting device (WOLD) also sometimes referred to as a “vent stop”. It became apparent to all sides of the case (Plaintiffs, property managers, developer and the U.S. Government) that WOLDS do not work and can be easily defeated by a child. Flimsy window screens used throughout the projects easily popped out when even light pressure was applied. The existing ICC Code has a loophole that allows unsafe fall protection devices to be installed in vulnerable windows. Another loophole that must be corrected or more lives will be lost is the sill height limitation that excludes many windows through which young children will fall from any fall protection requirements.

I support the Public Comments submitted by Jim Timwell, and encourage passage of his proposed amendments to ICC 1015.8 Window Opening:

- To require that all operable windows in residential occupancies have passive barriers – either window screens or window guards – that meet the ASTM standards for fall protection. (Public Comment E81-18).

- To remove any reference to sill height (Public Comment E82-18).

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. Effective window fall protection devices such as window bars or safety screens cost more than ineffective window opening limiter devices (WOLDs). However the life cycle costs of safety screens dramatically reduce the cost of ownership over time, as well as reducing injury and deaths to children. The screens are made of stainless steel and do not need to be replaced. The initial costs are only incrementally greater than the flimsy aluminum or plastic screens that are normally used. By significantly increasing the life of the screen, the owner will save money over time. And no one would advocate accepting the death of a child in exchange for the increased cost of the screen, would they?

**Public Comment 6:**

**Proponent:** Jeff Inks, representing Window and Door Manufacturers Association  
(jinks@wdma.com) requests Disapprove.

**Commenter’s Reason:** WDMA supports the Committee’s action to disapprove this proposal. We agree that the proposed amendment is far too broad in scope, making the requirement applicable to all operable windows with sills higher than 72 inches above the exterior finished grade or surface without justification. This would apply to all of those windows regardless of size, dimensions, or height above the floor, e.g., operable windows installed over a fixed or stationary window, windows of all operability types that are installed four, five, six feet or more above the floor, operable clerestories, small bathroom windows, or any number of other windows where fall protection has never been needed. The New York City ordinance cited as justification for this amendment is far more limited in scope than this proposal. Specifically, it requires guards in just those operable windows in rental apartments where children 10 years old or younger reside, prohibits installation of them on windows required for emergency escape and rescue, and does not
require them for privately own apartments and condos.

In addition, as the Committee pointed out, the fall statistics cited in the proposal are based on building stock that predates the current requirements. There has not been adequate substantiation to show that the current requirements are deficient or inadequate to justify the significant increased construction costs that would result from requiring window fall protection devices where they are not needed.

For these and other reasons, WDMA urges the Committee’s disapproval be upheld.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction

N/A

**Public Comment 7:**

**Proponent:** Janice Yglesias, representing American Architectural Manufacturers Association (jyglesias@aamanet.org) requests Disapprove.

**Commenter's Reason:** E81-18 effectively results in numerous applications unnecessarily requiring window fall protection such as operable windows installed over fixed windows or in other likely unreachable locations high in the wall. The change also disregards the critical need to strike a balance between window fall protection and emergency escape and rescue. The work done by New York City in the 1970’s, which is referenced as justification for this code change, was important but does not apply to openings required for emergency escape and rescue and it pre-dates development of the consensus-based ASTM F2006 and F2090 standards which are now widely used in compliance with the current code language in most states across the country. Therefore, AAMA urges disapproval of this proposal.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction Additional costs will be required to add window opening control devices in numerous applications unnecessarily requiring window fall protection such as operable windows installed over fixed windows or in other likely unreachable locations high in the wall.
Proposed Change as Submitted

Proponent: Jim Tidwell, Tidwell Code Consulting, representing Self (jimtidwell@tccfire.com); Jim Graham, Self, representing National Association for Child Window Safety (jgraham@childwindowsafety.org)

2018 International Building Code
Revise as follows

1015.8 Window openings. Windows in Group R-2 and R-3 buildings including dwelling units, where the top of the sill of an operable window opening is located less than 36 inches above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Operable windows where the top of the sill of the opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below and that are provided with window fall prevention devices that comply with ASTM F2006.
2. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
3. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.
4. Operable windows that are provided with window opening control devices that comply with Section 1015.8.1.
5. Operable windows equipped with corrosion resistant screen capable of withstanding a minimum force of 60 pounds (27 kg) as a concentrated load applied to the center of the screen.
6. Operable windows equipped with barriers with openings that do not allow the passage of a sphere 4 inches (102 mm) in diameter and are capable of withstanding a minimum force of 60 pounds (27 kg) as a concentrated load applied at an location on the barrier.

Delete and substitute as follows

1015.8.1 Window opening control devices. Window opening control devices shall comply with ASTM F2090. The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by Section 1030.2.

1015.8.1 Operation during emergencies. Windows provided for emergency escape and rescue shall comply with Section 1015.8 and Section 1030.2 for operation during emergencies.

Reason: This code change is intended to address the ongoing problem of children climbing onto and falling from windows. According to a report published in the Journal Pediatrics®, Official Journal of the American Academy of Pediatrics, “From 1990 through 2008, an estimated 98,415 children (95% CI: 82 416 - 114 414 children) were treated in US hospital EDs for injuries attributable to a fall from a window, with an average of 5,180 patients (95% CI: 4828 - 5531 patients) per year.” This report is the most recent, comprehensive study to date on the problem.

There is a viable, inexpensive solution to this problem that has proven effective in the largest city in the United States, New York City. In the mid 1970’s, New York City implemented a program they called “Children Can’t Fly” in an effort to reduce injuries resulting from window falls. A center piece of that effort was a Local Law requiring window guards in every building with three or more apartments where children under 10 resided. Since then, injuries and deaths from window falls have been dramatically reduced. According to Barbara Barlow, MD, Chief of Pediatric Surgery, Harlem Hospital Center, “The 96% decrease in accidental falls from windows since 1979 demonstrates that the “Children Can’t Fly” program in New York City has almost eliminated accidental falls from windows in our hospital population” [quote from report titled “Ten years of experience with falls from a height in children, Barlow B, Niemirska M, Gandhi R, Leblanc W (1983)].

Note that the New York City statute does not stipulate a minimum sill height, as they recognized the fact that children climb on windows; furniture placed near a window can provide a means to climb to the window; and children are inherently curious and will explore areas, such as windows, that have proven dangerous when not properly protected by child window fall protection devices. Using a sill height as a threshold to require fall protection is fallacious because the fall protection is necessary for climbing, exploring children, not just a child who happens to trip and fall near a window.

Also, New York City did not accept limiting devices as a solution. While those devices meet the criteria of ASTM standards, it is widely recognized that the devices are easily and regularly defeated by occupants in need of ventilation, especially during warm weather. When engaged, the limiting devices only allow the window to be opened four inches; however, they
are intentionally constructed to allow an adult to easily override the safety feature to fully open the window, thus exposing the child to the fall risk they’re intended to address. There is no available data to indicate these devices are having the intended effect, thus the need for a passive physical barrier that allows the window to open to provide necessary ventilation in a space. Allowing these devices in lieu of a physical barrier as described in this proposal places those with the greatest need – the lower socioeconomic strata of our society who depend upon natural ventilation for comfort in warm weather – at the greatest risk.

This proposal is simple and straightforward. It will require all operable windows in residential occupancies to have passive barriers – either window screens or window guards – that meet the ASTM standards for fall protection (60 lbs. concentrated load). It does not recognize limiting devices, as these have shown to be easily overridden, and of limited value.

Approving this code change will undoubtedly save thousands of children from serious injuries or death at a very low cost.

**Cost Impact:** The code change proposal will increase the cost of construction
Potential increase in cost due to the difference in the cost of guards or screens in lieu of vent stops.
Public Hearing Results

Errata: Current items 3 and 4 should have been shown as struck out.

Committee Action: Disapproved

Committee Reason: There was no justification for removal of the current options for fall prevention devices. This proposal would conflict with the EERO requirements. The references to ASTM F2006 and F2090 should not be deleted from this section - they serve different purposes. The two new alternatives for window protection are overly prescriptive. The new #3 is a reduction in safety - screen should not be relied on and 60 pounds force is less than that required for guards. Regarding proposed Section 1015.8.1. The reference back to Section 1015.8 is confusing. The reference to Section 1030.2 is incorrect - Section 1030.2 is emergency escape and rescue opening size - Section 1030.1.1 is the reference to ASTM F2090. (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Jim Tidwell, representing Self (jimtidwell@tccfire.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1015.8 Window openings. Windows in Group R-2 and R-3 buildings including dwelling units, where the top of the sill of an operable window opening is located less than 36 inches above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Operable windows where the top of the sill of the opening is located more than 75 feet (22860 mm) above the finished grade or other surface below shall be provided with one of the following:
   1.1. Corrosion resistant screens that comply with ASTM F2006.
   1.2. Barriers that do not allow the passage of a 4-inch diameter (102 mm) sphere and that comply with ASTM F2006.
   1.3. A window design that will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.

2. Operable windows equipped with corrosion resistant screen capable of withstanding a minimum force of 60 pounds (27 kg) as a concentrated load applied to the center of the screen, where the top of the sill of the opening is located 75 feet (22860 mm) or less above the finished grade or floor surface below shall be provided with one of the following:
   2.1. Corrosion resistant screens that comply with ASTM F2090.
   2.2. Barriers that do not allow the passage of a 4-inch diameter (102 mm) sphere and that comply with ASTM F2090.
   2.3. A window design that will not allow a 4-inch diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.

3. Operable windows equipped with barriers with openings that do not allow the passage of a sphere 4 inches (102 mm) in diameter and are capable of withstanding a minimum force of 60 pounds (27 kg) as a concentrated load applied at an location on the barrier.

1015.8.1 Operation during emergencies. Emergency Escape and Rescue. Windows provided required for emergency escape and rescue shall comply with Section 1015.8 and Section 1030.2 for operation during emergencies.

Commenter's Reason: This public comment revises the original submittal to address committee concerns that the ASTM standard was being omitted, and that the emergency rescue and escape provisions weren't clearly required. This is a companion comment to E-81.
The original code change and this comment are intended to address the ongoing problem of children climbing onto and falling from windows. According to a report published in the Journal Pediatrics®. Official Journal of the American Academy of Pediatrics, “From 1990 through 2008, an estimated 98,415 children (95% CI: 82,416 – 114,441 children) were treated in US hospital EDs for injuries attributable to a fall from a window, with an average of 5,180 patients (95% CI: 4828–5531 patients) per year.” This report is the most recent, comprehensive study to date on the problem. Unfortunately, earlier efforts to resolve this issue in the IBC left a loophole whereby the window opening limitations can be easily overridden. This override was included in response to concerns about conflicts with the criteria for emergency escape and rescue windows, so we’ve clarified in this code change that those criteria apply.

There is a viable, inexpensive solution to the problem that has proven effective in the largest city in the United States, New York City. In the mid 1970’s, New York City implemented a program they called “Children Can’t Fly” in an effort to reduce injuries resulting from window falls. A center piece of that effort was a Local Law requiring window guards in every building with three or more apartments where children under 10 resided. Since then, injuries and deaths from window falls have been dramatically reduced. According to Barbara Barlow, MD, Chief of Pediatric Surgery, Harlem Hospital Center, “The 96% decrease in accidental falls from windows since 1979 demonstrates that the “Children Can’t Fly” program in New York City has almost eliminated accidental falls from windows in our hospital population” [quote from report titled “Ten years of experience with falls from a height in children, Barlow B, Niemirska M, Gandhi R, Leblanc W (1983)].

Note that the New York City statute does not stipulate a minimum sill height, as they recognized the fact that children climb on windows; furniture placed near a window can provide a means to climb to the window; and children are inherently curious and will explore areas, such as windows, that have proven dangerous when not properly protected by child window fall protection devices. Using a sill height as a threshold to require fall protection is fallacious because the fall protection is necessary for climbing, exploring children, not just a child who happens to trip and fall near a window.

Also, New York City did not accept limiting devices as a solution (this is the previously mentioned loophole in the IBC). While those devices meet the criteria of ASTM standards, it is widely recognized that the devices are easily and regularly defeated by occupants in need of ventilation, especially during warm weather. When engaged, the limiting devices only allow the window to be opened four inches; however, they are intentionally constructed to allow an adult to easily override the safety feature to fully open the window, thus exposing the child to the fall risk they’re intended to address. There is no available data to indicate these devices are having the intended effect, thus the need for a passive physical barrier that allows the window to open to provide necessary ventilation in a space. Allowing these devices in lieu of a physical barrier as described in this proposal places those with the greatest need – the lower socioeconomic strata of our society who depend upon natural ventilation for comfort in warm weather – at the greatest risk.

This proposal is simple and straightforward. It will require all operable windows in residential occupancies to have passive barriers – either window screens or window guards – that meet the ASTM standards for fall protection. It does not recognize limiting devices, as these have shown to be easily overridden, and of limited value.

Approval of this change will undoubtably save thousands of injuries to children, and give the jurisdictions using the IBC similar protection for their children as the local law in New York City.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. While documentation exists that at least one of the compliant solutions will result in a lower life cycle cost to windows, the initial installation of fall prevention devices will slightly increase the cost of construction.

Public Comment 2:

Proponent: Jan Berichon, representing self (jbericho@ihs.org) requests As Submitted.

Commenter’s Reason: The code changes that have been submitted to improve child safety fix loopholes that result in child window falls. This is a companion comment to E-81 I’ve heard many heartbreaking stories over the past several years while working in a children’s hospital from families whose child fell from a window. Some of these falls are a result of having window opening limiting devices installed only to have someone override the product for ventilation resulting in a young child falling from the window. Some have thought they could override the device for just a few minutes while cleaning a room or cooking, only to have a child unexpectedly enter the room and fall. Others have thought they could override the device while the child was sleeping to cool the home, only to have the child awaken and fall. Window falls happen quickly and unexpectedly often while caregivers are in the same room.

Specialized, passive barriers such as child window fall prevention guards or robust child safety screens are designed for window fall prevention are now available. These are not typical insect screens, they allow windows to be fully opened for ventilation as intended while protecting children from falls. These products DO meet emergency escape and rescue requirements. They DO NOT conflict with emergency escape or rescue requirements.

Many homes and apartments, especially for higher risk populations with limited resources and/or living in affordable housing most often rely on window ventilation. Most often these families do not have access to air conditioning making it
unlikely that window openings will be kept at less than 4”.

Expecting families to limit window openings to less than 4” for ventilation in the heat is not realistic or a healthy option. This can and does cause other health risks. Passive barriers would allow windows to open fully for necessary ventilation as intended while protecting children at the same time.

These proposal changes will save thousands of children from injuries (or death) and decrease overall lifelong medical cost required to support a child throughout their life after a devastating window fall.

This code change will undoubtedly save thousands of children from serious injury or death. Thank you for your time and consideration of protecting our children from such a preventable tragedy as a window fall.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. The code changes will slightly increase initial construction costs, however the installation of passive window fall prevention barriers such as the robust, child window fall prevention screens will decrease costs of medical treatment incurred following a child falling from a window and will save thousands of children from injury or death as a result of a window fall. This will also decrease the need to repeatedly replace typical insect screens.

**Public Comment 3:**

**Proponent:** Lisa Dau, representing Keiki Injury Prevention Coalition

**Commenter’s Reason:** I am writing to you in expressing my support to the proposed changes to codes E82-18 relating to child window safety and window fall prevention for children.

I support the proposed ICC changes to E82-18, these changes will prevent serious injuries and deaths of young children from window falls by disallowing the use of window fall opening devices or vent stops. These devices fall short for window fall protection by allowing any user to easily override it's use thereby creating an unsafe environment for children near windows.

The proposed code changes would require all operable windows to be equipped with passive restraint devices that cannot be overridden. These changes fix the gap in the current code that allows devices that don't work, or can be overridden.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. The code changes will increase the cost of construction, however the cost is minimal compared to the extreme cost of the death or injury of a child falling out of a window that could easily, and affordably, be prevented.

**Public Comment 4:**

**Proponent:** Jim Graham, representing National Association for Child Window Safety

**Commenter’s Reason:** The original code change and this comment are intended to address the problem of children climbing onto and falling from windows. According to a report published in the Journal Pediatrics, Official Journal of the American Academy of Pediatrics, From 1990 through 2008, an estimated 98,415 children (95% CI: 82,416 - 114,414 children) were treated in US hospital EDs for injuries attributable to a fall from a window, with an average of 5,180 patients (95% CI: 4,828 - 5,531 patients) per year. What was not addressed in the American Academy of Pediatrics report was consideration of the cost to children in later life from traumatic Brain Injury. Osha now requires that any adult worker who is working six feet or more above grade SHALL be equipped with Passive restraints from falls. It is the contention of many that small children and babies deserve at minimum that same protection. The AAP report is the most recent, comprehensive study to date on the problem. Unfortunately, earlier efforts to resolve this issue in the IBC left a serious loophole whereby the window opening limitations can be easily overridden. This concern has been dismissed by several State Fire Marshals during legislation actions in those states. Concerns regarding about egress and ingress from windows equipped with child safety screens by Firefighter have been dismissed by State Fire Marshals. New York City has proven that installing passive guards to windows will cause a decrease in window falls by 96%. New York City did not accept limiting devices as a solution (this is the previously mentioned loophole in the IBC). While those devices meet ASTM standards, most serious people recognize that any window that can be opened will be opened especially during warm weather. There is a reasonable expectation that any child will be safe in its own home, I, and others have testified to that fact in many legal actions that resulted from adults defeating window limiters followed by a child fall. When engaged, the limiting devices only allow the window to be opened four inches; however desiring ventilation windows will be opened by adults and without some passive barrier children WILL be in danger and experience window falls. This particularly true for poor people with limited resources to spend for air-conditioning. Allowing window limiter devices rather than a physical barrier does place those with the greatest need - poor people, at the greatest risk. This proposal is simple and straightforward. It will require all operable windows in residential occupancies to have passive barriers - either child safety window screens or window guards meeting ASTM standards for fall protection. It specifically does not recognize limiting devices, as these have shown to be easily overridden. Approval of this change
will undoubtedly come sooner or later. Please do not allow a “Loophole” in the previous good work of this Council to continue to endanger thousands of children. Give the jurisdictions adopting the IBC, similar protection for their children as the Military of the United States is now providing for military families as well as local law in New York City.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. The code change proposal will modestly increase the cost of construction. Benefit/Cost analysis has demonstrated that very quickly that modest increase in cost will be returned in property management savings. That B/C analysis demonstrated that in multi-unit affordable housing it saved up to 98% of window maintenance cost. And does not include savings on insurance costs due to lessening the exposure due to liability concerns.

**Public Comment 5:**

**Proponent:** Brian Houlihan, representing National Association for Child Window Safety (brianhp@mchsi.com) requests As Submitted.

**Commenter’s Reason:** I support this proposal as submitted by the National Association for Child Window Safety, James Graham, and Jim Tidwell to require passive barriers to prevent children from falling from windows and removing the loopholes that allow gadgets that prevent the normal use of the window.

**Bibliography:** http://nebula.wsimg.com/2b4c64e9569d2c263a7a76a0a82e3d1d?
AccessKeyId=F48BDA224471F51206&disposition=0&alloworigin=1
Page three of the attached link demonstrates the benefit cost study with the window safety screens. This study was done by the National Association for Child Window Safety.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. Although the initial construction cost will increase, a benefit cost study analysis on at least one of the passive barriers, the safety screens, proves a net cost savings in approximately five years when used in rental housing units.

**Public Comment 6:**

**Proponent:** Wayne Parsons, representing Wayne Parsons Law Office (wparsons@hawaii.rr.com) requests As Submitted.

**Commenter’s Reason:** I submit this comment in support of proposed ICC code change proposal E82-18 which seeks to close a loophole in ICC 1015.8 – Window Openings that eliminates window fall protection devices on windows that children can and will fall out of, based upon sill height.
I support the Public Comments submitted by Jim Tidwell, and encourage passage of his proposed amendments to ICC 1015.8 Window Opening:

The loophole will be corrected by removing any reference to sill height (Public Comment E82-18). To suggest that no 5-year-old can climb up on a window sill that is 45-inches or 55-inches from the floor shows a lack of understanding of the capabilities of children. Setting any sill height limitation in the code suggests that a few children being seriously injured or dying is acceptable. Certainly no one would take such a position. Despite parents’ best efforts to restrict access to windows, 5-year-old boys and girls will get to the windows, and fall out, unless effective “passive” window fall protection devices are installed. Death and serious injury to children will and does occur because windows are unprotected. The existing code language, that this proposal attempts to fix, leaves many windows that children can get to, unprotected. OSHA requires effective passive fall protection devices to protect construction workers. That OSHA protection increases the cost of construction. Why wouldn't the ICC do the same for children?

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. More windows will require fall protection under this proposal. That is offset by a reduction in the death and permanent injury to children. Would anyone argue that the death of a child is worth a few dollars of savings in the cost of a home?

**Public Comment 7:**

**Proponent:** Jeff Inks, representing Window and Door Manufacturers Association (jinks@wdma.com) requests Disapprove.

**Commenter’s Reason:** WDMA strongly supports the Committee’s sound disapproval of this proposal. Eliminating requirements that window fall prevention devices must meet appropriate ASTM standards, and then replace those standards with only one or two criterion of the many requirements (performance, labeling, safety information, etc.) in the ASTM standards is a significant reduction in safety. Both ASTM F2006 and ASTM F2090 are well reasoned, scientifically based sets of performance and testing requirements for window fall protection devices. They have been developed and are maintained by industry and safety experts, including the Consumer Product Safety Commission (CPSC), under ASTM’s consensus process, and they are recommended by the National Safety Council. The proposed, lessor requirements, skirt most of what is required by the
F2006 and F2090 standards accordingly, and among other significant concerns, there are no provisions for how compliance is to be demonstrated or affirmed. This would place an undue burden on code officials to determine compliance as opposed to the current status where code officials can rely on labeling to the ASTM F2006 or F2090 standards as a means of determining compliance. In sum, no sound justification or other reasoning has been provided to show the standards or the IBC provisions that require them are deficient or inadequate.

In addition, there is significant concern that the proposed amendments will impede emergency escape and rescue as there are no provisions that the proposed corrosion resistant screens or barriers installed over required emergency escape and rescue windows be releasable as required by ASTM F2090, and that also in doing so, they do not reduce the minimum net clear opening area that is required for emergency escape and rescue openings by IBC section 1030.2. The proposed amendment to section 1015.8.1 simply point back to 1015.8, and IBC section 1030.2 only provides requirements for minimum egress opening dimensions. There is nothing about operation of the screens or barriers in case of emergency.

Furthermore, substantiation for the proposed amendment appears to rely heavily on the cited New York City ordinance, yet that ordinance was established well before the development of the existing ASTM standards and IBC provisions requiring them. It is also not as broad in scope, prohibits installation of guards on windows required for emergency escape and rescue, and requires guards to be approved by the NYC Health Department.

For these and other reasons, WDMA strongly urges the Committee’s disapproval be upheld.

**Cost Impact:** The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
NA

**Public Comment 8:**

**Proponent:** Janice Yglesias, representing American Architectural Manufacturers Association (jyglesias@aamanet.org) requests Disapprove.

**Commenter’s Reason:** E82-18 seeks to replace a collection of comprehensive window fall prevention device requirements included in the consensus-based ASTM F2006 and F2090 standards with a single, poorly-defined criterion. This approach grossly over-simplifies the issue and, beyond circumventing the extensive vetting inherent to the consensus-based standards development process, it places the burden of performance verification with the code official.

Furthermore, this proposal eliminates Window Opening Control Devices (WOCD’s) as a viable means of window fall prevention and limits the options to a screen, a window guard or a permanently limited opening, which are not compliant options for openings required for emergency escape and rescue. The ASTM F2006 and F2090 standards define criteria for window fall prevention devices that balance limiting a window opening to less than four inches, with the need to release such a device for egress, either through two independent actions or one dual action. By prescribing compliant devices, this proposed code change runs counter to the development of codes and standards that allow for more compliant devices to offer consumers more choices.

The work done by New York City in the 1970’s, which is referenced as justification for this code change, was important but does not apply to openings required for emergency escape and rescue and it pre-dates development of the consensus-based ASTM F2006 and F2090 standards which are now widely used in compliance with the current code language in most states across the country. An additional shortcoming related to emergency escape and rescue requirements is that the proposed revisions to 1015.8.1 addressing “operation during emergencies” point back to 1015.8 which does not include provisions for emergency escape and rescue and also points to 1030.2 which only outlines minimum sizes for emergency escape and rescue openings resulting in insufficient guidance.

In addition, this proposal has the potential to create confusion among homeowners between an insect screen, which is designed to keep insects out, and a fall prevention screen, which is a wholly different product. This confusion between window screen products is potentially dangerous and could lead a consumer to incorrectly believe that an insect screen serves the purpose of a fall prevention device.

For these reasons, AAMA urges disapproval of this proposal.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction
Potential increase in cost due to the difference in the cost of guards or screens in lieu of vent stops.
Proposed Change as Submitted

Proponent: John Terry, self, representing self (John.Terry@dca.nj.gov)

2018 International Building Code
Revise as follows

SECTION 1017 EXIT ACCESS TRAVEL DISTANCE

1017.3 Measurement. Exit access travel distance shall be measured from the most remote point of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit. Where more than one means of egress is required, exit access travel distance shall be measured to the nearest exit.

Exception: In open parking garages, exit access travel distance is permitted to be measured to the closest riser of an exit access stairway or the closest slope of an exit access ramp.

Reason: The text of this section is too subtle where it is stated that travel distance is measured to “an” exit. The added language makes clear the intent of the requirement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. The proposed change merely clarifies the intent of the current text and therefore has no impact on cost.
Public Hearing Results

Committee Action: As Modified

Committee Modification: 1017.3 Measurement. Exit access travel distance shall be measured from the most remote point of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit. Where more than one means of egress is required, exit access travel distance shall be measured to the nearest exit.

Exception: In open parking garages, exit access travel distance is permitted to be measured to the closest riser of an exit access stairway or the closest slope of an exit access ramp.

Committee Reason: The modification is for consistency within the sentence and the rest of Chapter 10. The code change will clarify that travel distance is to only one exit, not both. (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@iccsafe.org) requests As Modified by This Public Comment.

Further modify as follows:

2018 International Building Code

1017.3 Measurement. Exit access travel distance shall be measured from the most remote point of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit. Where more than one exit is required, exit access travel distance shall be measured to the nearest exit.

Exception: In open parking garages, exit access travel distance is permitted to be measured to the closest riser of an exit access stairway or the closest slope of an exit access ramp.

Commenter's Reason: The modification to the original proposal would be an issue for 2nd floors with open stairways or mezzanines – this is 'access to an exit' from that level. By combining the new sentence with the existing text, it clears this up in one sentence.

This public comment is submitted by the ICC BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions there of. In 2017 and 2018 the BCAC has held 5 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes and public comments. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction.

The proposed change merely clarifies the intent of the current text and therefore has no impact on cost.
**Proposed Change as Submitted**

**Proponent:** Homer Maiel, representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay) (hmaiel@gmail.com)

**2018 International Building Code**
Revise as follows

### TABLE 1020.2
**MINIMUM CORRIDOR WIDTH**

<table>
<thead>
<tr>
<th>OCCUPANCY</th>
<th>MINIMUM WIDTH (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any facility not listed in this table</td>
<td>44</td>
</tr>
<tr>
<td>Access to and utilization of mechanical, plumbing or electrical systems or equipment</td>
<td>24, 36</td>
</tr>
<tr>
<td>With an occupant load of less than 50</td>
<td>36</td>
</tr>
<tr>
<td>Within a dwelling unit</td>
<td>36</td>
</tr>
<tr>
<td>In Group E with a corridor having an occupant load of 100 or more</td>
<td>72</td>
</tr>
<tr>
<td>In corridors and areas serving stretcher traffic in ambulatory care facilities</td>
<td>72</td>
</tr>
<tr>
<td>Group I-2 in areas where required for bed movement</td>
<td>96</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm.

**Reason:** In order to be consistent with Section 306.2 of IMC and Section 1010.1.1 of IBC, this change is warranted.

**Cost Impact:** The code change proposal will increase the cost of construction
The change of corridor and door widths will increase the cost of construction.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: The current text is to allow for access to something like a plumbing chase or around mechanical equipment. Aisles reference corridor widths in Section 1018.5. There is an allowance in the IMC for dwelling units for a 24” wide corridor, so the revision would be a conflict. (Vote 12-2)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Homer Maiel, PE, CBO, representing ICC Tri-Chapter (Peninsula, East Bay, Monterey Bay) (hmaiel@gmail.com) requests As Submitted.

Commenter’s Reason: In Columbus, there was a misunderstanding on the part of some committee members that question whether this change will have any effect on residential occupancies. This Table is only addressing corridor widths. urge to support approved as submitted.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. The change of corridor and door width will increase the cost of construction.
Proposed Change as Submitted

PropONENT: John Williams, Chair, representing Healthcare Committee (AHC@iccsafe.org)

2018 International Building Code

Revise as follows

1020.5 Air movement in corridors. Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

Exceptions:

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.

2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.

3. Where located within tenant spaces of 1,000 square feet (93 m²) or less in area, utilization of corridors for conveying return air is permitted.

4. Incidental air movement from pressurized rooms within health care facilities, provided that the corridor is not the primary source of supply or return to the room. Transfer air movement required to maintain pressurization difference within health care facilities in accordance with Section 407.1 of the International Mechanical Code.

Reason: This is a clarification for when the corridor can be used for air movement. ASHREA 170 was added in IMC which clarifies which rooms are pressurized. This makes that connection in the codes. This is intended to cover transfer air for both positive and negative charged rooms. We thought ‘transfer’ was a more descriptive word for the air movement.

This proposal is submitted by the ICC Committee on Healthcare (CHC). The CHC was established by the ICC Board to evaluate and assess contemporary code issues relating to healthcare facilities. This is a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. In 2017 the CHC held 2 open meetings and numerous conference calls, which included members of the committees as well as any interested parties, to discuss and debate the proposed changes.

Information on the CHC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CHC effort can be downloaded from the CHC website at:
https://www.iccsafe.org/codes-tech-support/cs/icc-committee-on-healthcare/.

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

ASHREA 170 is already required in the IMC for pressurized rooms, so there are no changes to construction requirements.
Public Hearing Results

Committee Action: As Submitted

Committee Reason: This proposal clarifies the intent by actually describing what incidental air movement is. There needs to be a public comment to coordinate this section with IMC 601.2. Rather than the IMC reference to Section 407.1 which then references ASHRAE 170, perhaps a straight reference to ASHRAE 170 would be more direct. (Vote 12-2)

Assembly Action: None

Staff Analysis: This change will also apply to IMC Section 601.2.

Individual Consideration Agenda

Public Comment 1:

Proponent: John Williams, representing Healthcare Committee (ahc@icc SAFE.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1020.5 Air movement in corridors. Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts. Exceptions:

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.

2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.

3. Where located within tenant spaces of 1,000 square feet (93 m²) or less in area, utilization of corridors for conveying return air is permitted.

4. Transfer air movement required to maintain pressurization difference within health care facilities in accordance with Section 407.1 of the International Mechanical Code, ASHRAE 170.

Commenter’s Reason: This proposal was intended as a clarification. A reference to ASHRAE 170 directly provides the same information as stated in IMC Section 407.1.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This is already required in the IMC, so there would be no cost increase.
**Proposed Change as Submitted**

**Proponent:** Gregory Keith, representing The Boeing Company (grkeith@mac.com); Douglas Evans, representing DHE FPE LLC (dhefpe@gmail.com)

### 2018 International Building Code

**Revise as follows**

**1023.2 Construction.** Enclosures for interior exit stairways and ramps shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Interior exit stairway and ramp 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 interior exit stairways or ramps shall include any basements, but not any mezzanines. Interior exit stairways and ramps shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.

**Exceptions: Exception:**

1. **Interior exit stairways and ramps** in Group I-3 occupancies in accordance with the provisions of Section 408.3.8.
2. **Interior exit stairways** within an atrium enclosed in accordance with Section 404.6.

**Reason:**

Exception 2 to interior exit stairway enclosure construction within an atrium space was introduced in the 2015 Edition of the IBC. The proponent's published reason statement contended that the inherent one-hour atrium enclosure protection and required smoke control was equivalent to a one-hour interior exit stairway enclosure. Although equivalency to a one-hour enclosure can be debated, exit stairways serving four or more stories are required to be of 2-hour fire resistance-rated construction. The atrium enclosure protection is also exempted on three levels (404.6 Exception 3), which allows these stairs open to those levels.

This provision is also philosophically flawed on many levels. Interior exit stairway enclosures are to be used for no purpose other than as a means of egress. Opening and penetration protection requirements are intended to limit exposure of the enclosure.

The plural in Exception 2 (stairways) allows all required exits to be through the atrium. The current exception allows occupants unlimited egress travel distance down unenclosed stairways even if the stairs are within the smoke plume. Furthermore, compliance with Section 909 is typically reliant on fans, dampers, secondary power supplies and the ever changing fuel loading on the atrium floor. In high-rise buildings, such stairways are required to be within smokeproof enclosures.

Allowing unlimited travel distance on an unenclosed stairway is technically and philosophically inconsistent with the exit access travel distance limitations stated at Section 404.9. Those provisions allow for a maximum of 200 feet of travel at other than the level of exit discharge. The *IBC Code and Commentary, Volume I* states, “Since smoke is being drawn into the atrium, the time allotted to reach an exit through the atrium is limited.” It would seem logical that that same thinking would apply to an unenclosed interior exit stairway.

Additionally, Section 905.4 requires a standpipe hose connection for each story in every required interior exit stairway since these enclosures provide a protected space for fire department operations. Obviously, there is no passive standpipe hose connection protection in an unenclosed interior exit stairway.

Traditionally, exit access stairways within atrium spaces have been allowed to be unenclosed (Section 1019.3, Condition 5). However, exit access travel distance limitations in Section 1017.2 apply. In fact, Table 1017.2 Footnote a, references Section 404.9 travel distance limitations through an atrium space. This minimally creates confusion, if not a contradiction.

This proposal restores the original ICC Code Technology Committee philosophy that interior exit stairways always be enclosed with no exceptions. Removal of the current exception ensures a protected path of means of egress travel for building occupants between the exit access and exit discharge portions of the means of egress system.

**Cost Impact:** The code change proposal will increase the cost of construction
Approval of this proposal will increase the cost of construction only in buildings having an atrium where an unenclosed interior exit stairway is desired. If the building otherwise has the required number of exits, such a stairway would be regarded as an exit access stairway and there would be no cost impact.
Public Hearing Results

Committee Action: Disapproved

Committee Reason: This is currently permitted. Additional protection items for exit stairways within an atrium was added by G35-18. There is no history of problems with exit stairways within atriums, so there is no reason to eliminate the option.

A portion of the committee felt that smoke protected atriums do not offer the same level of protection as an exit enclosure. If both exit stairways are within atriums this could be a serious issue. There was also a concern that there is no limit on the travel distance on an exit stairway in an atrium. (Vote 8-7)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gregory Keith, representing DHE FPE LLC (grkeith@mac.com); Douglas Harold Evans, DHE FPE LLC, representing DHE FPE LLC (dhefpe@gmail.com) requests As Submitted.

Commenter’s Reason: Code change proposal E96-18 attempted to remove Exception 2 of Section 1023.2. That exception was introduced into the 2015 Edition of the IBC. Section 1023 provides the requirements for interior exit stairways and ramps. By definition, exterior exit stairways and ramps are exit components. Components in the exit portion of the means of egress system are regarded as providing a highly protected environment for occupants as they egress a building. Typically, interior exit stairways and ramps are one- or two-hour-rated assemblies with restricted opening protection. For this reason, occupants may travel unlimited distances in such exit components.

Exception 2 permits an unenclosed stairway within an atrium to qualify as an interior exit stairway (exit component). Such a design is problematic. Clearly, occupants have no passive fire resistance-rated protection normally associated with exit components. The assumption is that the smoke control required within an atrium space will provide equivalent protection.

Typically, atrium spaces employ the exhaust method of smoke control. This technique causes generated smoke to be exhausted vertically up through the atrium and exhausted from the top of the space. This could prove to compromise the exit path. Fundamentally, the provision violates numerous philosophical principals. One, an exit is to be used for no other purpose than a means of egress. The atrium is a fully functional area with associated fuel loads. And one, an exit is required to lead directly to the exterior of the building or shall be extended to the exterior of the building with an exit passageway. The unenclosed stairway would typically terminate within the lowest level of the atrium space. And one, Section 404.9.3 limits exit access travel distance within an atrium at other than the level of exit discharge to 200 feet. The allowance for unlimited travel distance on an unenclosed atrium stairway is in contravention with the fundamental atrium travel protection requirements. And one, the fire service typically uses enclosed interior exit stairways as staging areas and protected access to required standpipes. This ability is lost with an unenclosed stairway.

At the committee hearings in Columbus, Ohio, Item E96-18 proved to be very contentious. The committee vote was 7 to 7. The Chair voted against the proposal because it was felt that the provision should not be removed from the code based on the Chair’s vote. In the committee’s reason statement for disapproval of Item E96-18 it was stated that additional protective measures had been introduced with the approval of Item G35-18. In fact, none of those requirements address any of the concerns identified in the previous paragraph. That same reason statement noted that, A portion of the committee felt the smoke protected atriums do not offer the same level of protection as an exit enclosure. Additionally stated, There was also a concern that there is no limit on the travel distance on an exit stairway in an atrium. (Vote 8-7) If you believe that an unenclosed stairway within an atrium provides the same degree of occupant protection as a fire resistance-rated enclosure with commensurate opening and penetration protection, please do not support this public comment. If you believe that an exit component should provide for a reliably safe path of travel to the exterior of the building, please break the stalemate by supporting this public comment. Approval of this public comment will restore the appropriate level of occupant safety normally associated with an exit component.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. Approval of this public comment will increase the cost of construction only in buildings having an atrium where an unenclosed interior exit stairway is desired. If the building otherwise has the required number of exits, such a stairway would be regarded as an exit access stairway and there would be no cost impact.

E96-18
Proposed Change as Submitted

Proponent: Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@icc safe.org)

2018 International Building Code
Revise as follows

1029.16 Handrails. Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and stepped aisles shall be provided with handrails in compliance with Section 1014 located either at one or both sides of the aisle or within the aisle width. Where the stepped aisle have seating on one side and the aisle width is 74 inches (1880 mm) or greater, two handrails are required. Where two handrails are required, one of the handrails shall be within 30 inches horizontally of the end of the aisle accessways.

Exceptions:
1. Handrails are not required for ramped aisles with seating on both sides.
2. Handrails are not required where, at the side of the aisle, there is a guard with a top surface that complies with the graspability requirements of handrails in accordance with Section 1014.3.
3. Handrail extensions are not required at the top and bottom of stepped aisles and ramped aisles to permit crossovers within the aisles.

1029.16.1 Discontinuous handrails. Where there is seating on both sides of the aisle, the mid-aisle handrails shall be discontinuous. Where the stepped aisle is required to have two handrails, handrails not located on a guard or wall shall be discontinuous. The gaps or breaks at intervals shall not exceed five rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of not less than 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the mid-aisle handrail shall have rounded terminations or bends.

1029.16.2 Handrail termination. Handrails located on the side of stepped aisles shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stepped aisle flight.

1029.16.3 Mid-aisle termination. Mid-aisle handrails shall not extend beyond the lowest riser and shall terminate within 18 inches (381 mm), measured horizontally, from the lowest riser. Handrail extensions are not required.

Exception: Mid-aisle handrails shall be permitted to extend beyond the lowest riser where the handrail extensions do not obstruct the width of the cross aisle.

Reason: The social stairway is a new style being used in common areas of schools and multi-assembly buildings. It appears to fall somewhere between stairways and assembly seating. If this is considered a stairway next to platforms, the general requirement for handrails on both sides of the stairway prevents access to the platforms (Example 4). Considering this configuration as assembly seating would require one handrail with current text. This proposal considers this arrangement as a type of assembly seating. The width would have to be determined using both the general circulation number from the upper/lower floor and the seating in accordance with Section 1029.6.1, which requires extra width if a handrail is not with 30". By considering this assembly seating, accessible wheelchairs spaces would already be addressed. Drop offs along the top would have to meet guard provisions.

To address occupant safety, this proposal will require a mid-aisle handrail on wide stepped aisles in addition to the handrail on the wall. The reasoning for 74" was that we did not want either side of the handrails to create a width that was not readily useable (30" + 44" = 74"). The second handrail being within 30" of the edge of the platform allows flexibility in handrail placement, but still keeps the handrail within reach of persons moving off the platforms. Where there is not a cross aisle, the handrail would still have to have handrail extensions at the top and bottom, as well as meet all the other handrail provisions in Section 1014 and 1029.6. This 2nd handrail would typically not show up in stadium seating where aisles are typically less wide than specified here.

As you can see in the examples provided: Example 1 has two handrails, but with one on the far side of the platform. Example 4 a 2nd handrail blocks access to the platforms, so people either climb up the platforms, or go under the handrail. In example 2 and 3 a handrail is only provided on one side of the stairway, regardless of width. None of these configuration would address stairway safety and access to the platforms. Example 3 has an example handrail drawn in red of what these requirements would add.
This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

Figure 1

Figure 2
Cost Impact: The code change proposal will increase the cost of construction. In some situations, this could require a 2nd handrail for occupant safe egress on the stairways.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: This is used in a variety of school environments so addressing this issue is needed. The handrail adjacent to this stairway seating arrangement should be the same as required for stepped aisles. Where the 2nd handrail is located needs to be clarified. There was a question on what was meant by the “handrail not located on a guard”. Perhaps a definition of “stepped aisle” is needed. There were a couple of grammar errors that need to be fixed. (Vote 9-5)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:
Proponent: Gene Boecker, representing Code Consultants, Inc. (geneb@codeconsultants.com) requests As Modified by This Public Comment.
Modify as follows:

2018 International Building Code

1029.16 Handrails. Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and stepped aisles shall be provided with handrails in compliance with Section 1014 located either at one or both sides of the aisle or within the aisle width. Where the stepped aisle have seating on one side and the aisle width is 74 inches (1880 mm) or greater, two handrails are required. Where two handrails are required, one of the handrails shall be within 30 inches horizontally of the end of the stepped aisle accessways.

Exceptions:
1. Handrails are not required for ramped aisles with seating on both sides.
2. Handrails are not required where, at the side of the aisle, there is a guard with a top surface that complies with the graspability requirements of handrails in accordance with Section 1014.3.
3. Handrail extensions are not required at the top and bottom of stepped aisles and ramped aisles to permit crossovers within the aisles.

Commenter’s Reason: The committee expressed a concern that guard and stepped aisle may not be understood. That is unlikely. A guard at the side of a stair is certainly something that has been provided as a part of the code for a long time. The only real concern was the language about how the location of the second handrail should be measured. That has been modified to address that concern. This is a coe change that needs to be addressed. The current provisions of the code do not address what to do for these types of stairways that are located all over the country; with more popping up everyday.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction As noted in the original proposal the cost will be increased where a second handrail is required.

Public Comment 2:
Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc.org) requests As Modified by This Public Comment.
Modify as follows:

2018 International Building Code

1029.16 Handrails. Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and stepped aisles shall be provided with handrails in compliance with Section 1014 located either at one or both sides of the aisle or within the aisle width. Where the stepped aisle have seating on one side and the aisle width is 74 inches (1880 mm) or greater, two handrails are required. Where two handrails are required, one of the handrails shall be within
30 inches horizontally of the end side of the tiered floor adjacent to the stepped aisle accessways.

**Exceptions:**

1. *Handrails* are not required for ramped *aisles* with seating on both sides.
2. *Handrails* are not required where, at the side of the aisle, there is a *guard* with a top surface that complies with the graspability requirements of *handrails* in accordance with Section 1014.3.
3. *Handrail extensions* are not required at the top and bottom of stepped *aisles* and ramped *aisles* to permit crossovers within the *aisles*.

### 1029.16.1 Discontinuous handrails.

Where there is seating on both sides of the aisle, the mid-aisle *handrails* shall be discontinuous. Where the stepped aisle is required to have two handrails, *handrails* not located on a guard or wall the mid-aisle *handrails* shall be discontinuous. The gaps or breaks at intervals shall not exceed five rows to facilitate access to seating and to permit crossing from one side of the *aisle* to the other. These gaps or breaks shall have a clear width of not less than 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the mid-aisle *handrail* shall have rounded terminations or bends.

### 1029.16.2 Handrail termination.

*Handrails* located on the side of stepped *aisles* shall return to a wall, *guard* or the walking surface or shall be continuous to the *handrail* of an adjacent stepped *aisle flight*.

### 1029.16.3 Mid-aisle termination.

Mid-aisle *handrails* shall not extend beyond the lowest riser and shall terminate within 18 inches (381 mm), measured horizontally, from the lowest riser. *Handrail extensions* are not required.

**Exception:** Mid-aisle *handrails* shall be permitted to extend beyond the lowest riser where the *handrail extensions* do not obstruct the width of the cross *aisle*.

**Commenter's Reason:** This new style of assembly seating is very common in schools and libraries. It is an important safety issue that needs to be addressed. It is hoped that these tweaks with clarify the requirements so this can be added to the code.

To address the committee’s concerns:

The new text in Section 1029.16 and 1029.16.1 will allow for the mid aisle handrail to be the same as for stepped aisles. The term tiered floors will be understood because it is already used in Section 1029.5. The 74 was chosen as the point where a 2nd handrail in the width of the stepped aisle would still allow for movement up and down on each side of the handrail.

The end of the aisle accessways was chosen because the tiered platforms do not always contain seats to measure from. Since the seating areas at stepped aisles are tiered platforms (with or without seats), this may be clearer.

Handrails are permitted on the wall or as the top rail of a guard in Section 1029.16. Since the discontinuous handrail could be either at the edge of the seating platforms or in the stepped aisle, mid-aisle handrail is current language that is easier to understand.

Stepped aisles is not defined for assembly seating, but is clearly understood in the context of Section 1029. Aisle is a defined term.

The grammatical error mentioned by the committee of exceeding to exceed in Section 1029.16.1 was addressed as an editorial correction to the original proposal by ICC staff.

What we want to see:
This is why we do not want continuous handrails where you want someone to access seating. This is a safety issue for when someone tries to climb up or down the tiers or goes over or under the handrail to access the seating areas. Discontinuous handrails already have requirements for maximum number of rows and maximum breaks that have worked with typical assembly seating for many decades.

This is what we do not want to see when you want access to seating.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. In some situations, this could require a 2nd handrail for occupant safe egress on the stairways.
Proposed Change as Submitted

Proponent: Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

2018 International Building Code

SECTION 1030 EMERGENCY ESCAPE AND RESCUE

Revise as follows

1030.1 General. Where required. In addition to the means of egress required by this chapter, emergency escape and rescue openings shall be provided in the following occupancies:

1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.3.(1) and 1006.3.3.(2).
2. Group R-3 and R-4 occupancies.

Basements and sleeping rooms below the fourth story above grade plane shall have not fewer than one exterior emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a public way or to a yard or court that opens to a public way.

Exceptions:

1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
2. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that opens to a public way.
3. Basements without habitable spaces used only to house mechanical equipment and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have emergency escape and rescue openings.
4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.

Reason: This is one of a series of 11 proposals to coordinate the Emergency Escape and Rescue Openings (EERO) technical criteria in the IBC and IRC. Please see the proposal for the definition of Emergency Escape and Rescue Openings for additional information. Due to the code development schedule the proposals for IBC will be proposed in Group A and the proposals for IRC will be proposed in Group B.

IBC

- The definition includes ‘exterior’, so it does not need to be repeated in the text.
- It was decided not to add the IRC defined ‘habitable attic’. If added to the IBC, would the IBC also have to pick up the definition and the number of stories below the habitable attic space? (the IRC definition says this is not a story).
- IBC Exception 2 – change to correct term for ‘exterior egress balcony’
- IBC Exception 3 – coordination with IRC, limit is just size without additional criteria for habitable.
- Add storm shelter exception to IBC. Reference ICC 500 so that the escape openings provided are what is specified for storm shelters.

There will be a similar proposal for the IRC in Group B.

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in 1988. BCAC is a committee of users who meet periodically to consider and make recommendations concerning the implementation of the ICC Codes.
Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This is a coordination item for exceptions for EEROs already permitted between the codes.
Public Hearing Results

Errata: The errata was the addition of Section 1030.1 Exception 4.

Committee Action: As Modified

Committee Modification: 1030.1 Where required. In addition to the means of egress required by this chapter, emergency escape and rescue openings shall be provided in the following occupancies:
1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.3(1) and 1006.3.3(2).
2. Group R-3 and R-4 occupancies.

Basements and sleeping rooms below the fourth story above grade plane shall have not fewer than one emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a public way or to a yard or court that opens to a public way.

Exceptions:
1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
2. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that opens to a public way.
3. Basements without habitable space used only to house mechanical equipment and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have emergency escape and rescue openings.
4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.
5. Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
   5.1. One means of egress and one emergency escape and rescue opening.
   5.2. Two means of egress.

Committee Reason: The modification restores Exception 3 to its original language. The revised language would require a EERO in a non-habitable basement that had other than mechanical equipment. This proposed exception works for single family homes, not is not great for Group R-2 occupancies. This is a good coordination between the IBC and IRC requirements for emergency escape and rescue openings and also cleans up some of the language. The addition for coordination with storm shelters (see published errata) is needed.
(Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Gregory Keith, representing The Boeing Company (grkeith@mac.com)requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1030.1 General. Emergency escape and rescue openings shall comply with the requirements of this section.

1030.1 1030.2 Where required. In addition to the means of egress required by this chapter, emergency escape and
rescue openings shall be provided in the following occupancies:

1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.3(1) and 1006.3.3(2).
2. Group R-3 and R-4 occupancies.

Basements and sleeping rooms below the fourth story above grade plane shall have not fewer than one emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a public way or to a yard or court that opens to a public way.

Exceptions:

1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
2. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that opens to a public way.
3. Basements without habitable space and having not more than 200 square feet (18.6 m²) in floor area shall not be required to have emergency escape and rescue openings.
4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.
5. Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
   5.1. One means of egress and one emergency escape and rescue opening.
   5.2. Two means of egress.

Commenter’s Reason: The ICC Building Code Action Committee submitted a series of proposals intended to clarify and coordinate Chapter 10 emergency escape and rescue opening provisions. The first in the series (E107-18) inadvertently removed necessary charging language from Section 1030. This public comment corrects that oversight. No technical changes are proposed. Inclusion of appropriate charging language is consistent with Item E38-18 which editorially corrected other Chapter 10 charging language provisions. Having proper enabling or charging provisions for various technical requirements is legally necessary for a model code adopted by a given political subdivision.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction

This public comment is editorial in nature.
**Proposed Change as Submitted**

**Proponent:** Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

**2018 International Building Code**

Revise as follows

1030.1.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from inside the room without the use of keys or tools. Window-opening control devices complying with ASTM F2090 shall be permitted for use on windows serving as a required emergency escape and rescue opening shall comply with ASTM F2090.

**Reason:** This is one of a series of 11 proposals to coordinate the Emergency Escape and Rescue Openings (EERO) technical criteria in the IBC and IRC. Please see the proposal for the definition of Emergency Escape and Rescue Openings for additional information. Due to the code development schedule the proposals for IBC will be proposed in Group A and the proposals for IRC will be proposed in Group B.

IBC - Last sentence reworded as a requirement to be consistent with IRC

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This is a coordination item for requirements for EEROs already permitted between the codes.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: There is an errata to the IRC to Section R310.1.1. This will make the current language in the IRC and IBC match, so this revision is not necessary. (Vote 14-0)

Assembly Action: None

Staff Analysis: The code language in IRC 2018 is as follows:
R310.1.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from the inside of the room without the use of keys, tools or special knowledge. Window opening control devices on windows serving as a required emergency escape and rescue opening shall comply with ASTM F2090.

Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@icc safe.org) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1030.1.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be operational from inside the room without the use of keys or tools. Window-opening control devices on windows serving as a required emergency escape and rescue opening shall comply with ASTM F2090 Section 1015.8.

Commenter’s Reason: The BCAC requested that this proposal be disapproved because there was a possibility that there was errata to the IRC that would make these sections the same. That was not the case. However, not all emergency escape and rescue openings (EEROs) are required to have a window opening control device that complies with ASTM F2090. The proposed revision will coordinate with Sections 1015.8. Section 1015.8 contains requirements other than compliance with the ASTM standard. The BCAC will provide coordinating proposals for EEROs for IRC in Group B.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction
The standards are already included in Section 1015.8, so there is no change to requirements that would increase costs.
**Proposed Change as Submitted**

**Proponent:** Ed Kulik, Chair, representing ICC Building Code Action Committee (bcac@iccsafe.org)

**2018 International Building Code**

Add new text as follows

**1030.2 Emergency escape and rescue openings.** Emergency escape and rescue openings shall have minimum dimensions in accordance with Section 1030.2.1 through 1030.2.3.

Revise as follows

**1030.2.1 Minimum size.** Emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.53 m²).

**Exception:** The minimum net clear opening for grade-floor emergency escape and rescue openings shall be 5 square feet (0.46 m²).

**1030.2.2 Minimum dimensions.** The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.

**1030.3 Maximum height from floor.** Where a window is provided as the emergency escape and rescue openings, such window shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor.

**Reason:** This is one of a series of 11 proposals to coordinate the Emergency Escape and Rescue Openings (EERO) technical criteria in the IBC and IRC. Please see the proposal for the definition of Emergency Escape and Rescue Openings for additional information. Due to the code development schedule the proposals for IBC will be proposed in Group A and the proposals for IRC will be proposed in Group B. This proposal deals with Minimum size, dimensions and height.

IBC 310.3 - revise to coordinate language and organization with the IRC.

There will be a similar proposal to Group B for IRC:

This proposal is submitted by the ICC Building Code Action Committee (BCAC). BCAC was established by the ICC Board of Directors in July 2011 to pursue opportunities to improve and enhance assigned International Codes or portions thereof. In 2017 the BCAC has held 3 open meetings. In addition, there were numerous Working Group meetings and conference calls for the current code development cycle, which included members of the committee as well as any interested party to discuss and debate the proposed changes. Related documentation and reports are posted on the BCAC website at: https://www.iccsafe.org/codes-tech-support/codes/codedevelopment-process/building-code-action-committee-bcac.

**Cost Impact:** The code change proposal will not increase or decrease the cost of construction. This is a coordination item for requirements for EEROs already permitted between the codes.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: The change in the text to Section 1030.2.3 appears to be mandating a window. There is no sill height given for other openings. Emergency escape and rescue openings can be doors or other acceptable openings. (Vote 13-1)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Ed Kulik, representing ICC Building Code Action Committee (bcac@iccsafe.org) requests As Submitted.

Commenter’s Reason: One of the points of the 11 changes proposed for emergency escape and rescue opening (EERO) is that they can be doors or windows. The committee approved 9 of those changes during the code change hearings in April. This proposal is an important piece for coordination of the IRC and IBC requirements for EEROs. To address the committee’s concerns - The threshold on doors is addressed in Section 1010. Section 1030.2.3 does not mandate windows, but says if window option is chosen, then there is maximum height of the bottom edge so that people can crawl out.

A complete version on what this section would look like if all 11 proposals passed was in the reason statement of G5-18. The following is the section related to door and window sizes. Section 1030.3 was approved in code change E110-18.

1030.2 Emergency escape and rescue openings. Emergency escape and rescue opening shall have minimum dimensions in accordance with Section 1030.2.1 through 1030.2.3.

1030.2.1 Minimum size. Emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.53 m²).

Exception: The minimum net clear opening for grade-floor emergency escape and rescue openings shall be 5 square feet (0.46 m²).

1030.2.2 Minimum dimensions. The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.

1030.2.3 Maximum height from floor. Where a window is provided as the Emergency escape and rescue openings, such window shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor.

1030.3 Emergency escape and rescue doors. Where a door is provided as the required emergency escape and rescue opening, it shall be a swinging door or a sliding door.

The BCAC will provide coordinating proposals for EEROs for IRC in Group B.

Cost Impact: The net effect of the public comment and code change proposal will not increase or decrease the cost of construction. This is a coordination item for requirements for EEROs already permitted between the codes.
**E115-18**

IBC: 1105.1, 1105.1.1, Table TABLE 1105.1.1

**Proposed Change as Submitted**

**Proponent:** Joseph Hetzel, Thomas Associates, Inc., representing American Association of Automatic Door Manufacturers (jhetzel@thomasamc.com)

**2018 International Building Code**

Revise as follows

1105.1 Public entrances. In addition to accessible entrances required by Sections 1105.1.1 through 1105.1.7, 1105.1.8, at least 60 percent of all public entrances shall be accessible.

Exceptions:

1. An accessible entrance is not required to areas not required to be accessible.
2. Loading and service entrances that are not the only entrance to a tenant space.

Add new text as follows

1105.1.1 Automatic doors. In facilities with the occupancies and building occupant loads indicated in Table 1105.1.1, at least one accessible exterior public entrance shall be either a full power-operated door or a low-energy power-operated door.

<table>
<thead>
<tr>
<th>OCCUPANCY</th>
<th>BUILDING OCCUPANT LOAD GREATER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1, A-2, A-3, A-4</td>
<td>300</td>
</tr>
<tr>
<td>B, M, R-1</td>
<td>500</td>
</tr>
</tbody>
</table>

**Reason:**

1. Enhances accessibility. It is widely accepted that automatic doors in general enhance overall accessibility, by accommodating a wide array of conditions people have that qualify them to need accessibility at facility entrances. This accommodates a wide variety of accessibility needs that manual doors being installed today cannot encompass.
2. Considers “transient” use. The Table directly addresses people who infrequently use public entrances so that they would need no special knowledge, skill or tool to enter a facility. All occupancies included in the Table experience such “transient” use.
3. Addresses a public need. The occupancies cited are associated with a serious existing need for automatic doors. The safety of both use and moving people in and out of buildings in those occupancies by using only manually operated doors is a major concern particularly in emergency situations.
4. Focuses on public entrances. The Table applies where the public is most likely to access facilities. Regarding which public entrance to choose for an automatic door if multiple entrances are accessible, this is left to the building designer on which would be best but the requirement of "at least one" door allows the designer to consider all entrances if feasible.
5. Occupancies involved are those most applicable to the public. The population requiring accessibility commonly needs accommodations to enter assembly, business, mercantile, and hotel/motel facilities as part of their everyday life. No code requirement for automatic doors means an increased safety risk and a decreased accessibility convenience.
6. Brings completion to accessible entrance provisions. The Table is needed in Section 1105, where accessible entrances are governed.
7. No disproportional economic burden. The thresholds have been chosen so as not to be a requirement for smaller occupancies such as small assembly facilities or strip mall businesses.
8. Addresses statistical need for accessibility. The thresholds also assume that a minimum of 2% of the population will be in need of accessibility at any given time for the specified occupancies. For an occupant load of 300, this means that at least six people will have the need that an automatic door will provide. The anticipated accessibility need should exceed this estimate a large enough percentage of time to constitute a critical mass of facilities needing power-operated doors when meeting the established thresholds.

9. Enhances public safety. Automatic doors are regulated by ANSI/BHMA safety standards intended to prevent people from coming in contact with moving doors. Facilities employing automatic doors are required to abide by these requirements, which affords protection to anyone - including children, the elderly, and/or those with accessibility needs - in the vicinity of moving doors while minimizing or preventing operational problems. Automatic doors are thus far safer in the marketplace than manually operated doors.

10. Favorably increases facility usage. Those with accessibility needs are less likely to choose to use a facility without an automatic door, therefore resulting in reduced institutional, social, and economic benefits to entities operating within a facility.

11. Occupant load thresholds have related code precedence. The justification of minimum occupant load uses Risk Category and minimum number of exits as starting points, since these are the only locations in the Code with occupancy thresholds to consider. Risk Category and minimum number of exits share a common concern with automatic doors because the threshold numbers represent a critical mass of people above which a unique set of code requirements need to apply. Following is an explanation of how the threshold numbers have been arrived at for each occupancy in the Table.

   o Group A: Also from Table 1604.5, Risk Category III. The scope of public assemblies is an occupant load greater than 300.

   o Groups B, M and R-1: From Table 1006.3.1, minimum number of exits or access to exits per story. Table 1006.3.1 states that three exits or exit access doorways shall be provided from any space with an occupant load of 501 to 1000, and four shall be provided with an occupant load greater than 1000. The proposed Table would set a threshold of three exits or exit access doorways, in a given story with a public entrance, to require an automatic door at that public entrance. R-1 is the applicable Group R occupancy because hotels and motels should be encompassed by the Table where the threshold occupant load would be appropriate for those structures.

12. Alleviates concerns about maximum manual force required to operate an entrance door. Although the IBC regulates this maximum force, any type of force needed to operate a manual door is a concern for the accessibility community. Automatic doors would require no force to operate.

13. Alleviates concerns about manual force variations. Wind pressures, internal building stack pressures, and/or increasing hardware friction are common concerns and affect manual operation of entrance doors all throughout the country. This concern is removed since automatic doors require no force to operate.

14. More than a "best practice" requirement. The requirement is a need, as opposed to a "best practice", because automatic doors encourage people to use facilities, are safer, and more efficiently move people in and out of buildings. It is widely known that people - particularly children, the elderly, and/or those with accessibility needs - have great difficulty, or find it impossible, to open entrance doors because of stack pressures, door configurations, door friction, wind, or door weight.

**Cost Impact:** The code change proposal will increase the cost of construction. The increased construction cost will be outweighed by the benefits provided to the public as outlined in our reasoning statement.

---

E115-18
Public Hearing Results

Committee Action: As Submitted
Committee Reason: Having one automatic door on these types of facilities would address the needs of persons with mobility impairments or persons with not enough strength to open exterior doors. The use group and occupant loads are appropriate levels for application. (Vote 13-0)

Assembly Action: None

E15-18

Individual Consideration Agenda

Public Comment 1:

Proponent: Micah Chappell, Seattle Department of Construction and Inspections, representing Seattle Department of Construction and Inspection (micah.chappell@seattle.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1105.1.1 Automatic doors. In facilities with the occupancies and building occupant loads indicated in Table 1105.1.1, at least one accessible exterior public entrance shall have one door be either a full power-operated door or a low-energy power-operated door. Where the public entrance includes a vestibule, at least one door into and one door out of the vestibule shall meet the requirements of this section.

Commenter's Reason: The original proposal provides additional easy if ingress and egress and was a good start in getting automatic doors installed at one required accessible entrance, but seemed to indicate that if you had a bank of doors at the required public entrance, that all of those doors needed to be automatic. We also added to the proposal that all public entrances that are required to be accessible provide one automatic door, considering if you had a large facility, the accessible public entrances could be a significant distance apart making access to an automatic door more difficult. Additionally the proposal did not address what needed to be installed when the accessible public entrance has a vestibule with doors arranged in series.

Cost Impact: The net effect of the public comment and code change proposal will increase the cost of construction. This proposal will cause a minor increase in construction cost for the occupancy classifications that are required to meet this standard.

Public Comment 2:

Proponent: Micah Chappell, representing Seattle Department of Construction and Inspection (micah.chappell@seattle.gov) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

<table>
<thead>
<tr>
<th>OCCUPANCY</th>
<th>BUILDING OCCUPANT LOAD GREATER THAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1, A-2, A-3, A-4</td>
<td>300</td>
</tr>
<tr>
<td>B, M, R-1</td>
<td>500</td>
</tr>
</tbody>
</table>

Commenter's Reason: The table did not address mixed-use facilities when applying this section and the proposed footnote provides a definitive path for the Code Official. An example of why this footnote for mixed-use facilities is needed would be if you had both a M occupancy and an A-3 occupancy. The M occupancy has an occupant load of 350 and the A-2 occupancy has an occupant load of 250, individually they do not exceed the requirements of the table so the
requirements would not apply, but the total sum of the building occupant load would exceed the limits of the table. So as this example shows the original proposal did not provide guidance on how to apply the section to mixed-use facilities. We believe the footnote addresses this issue.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. This proposal will cause a minor increase the cost of construction.

**Public Comment 3:**

**Proponent:** Lee Kranz, representing Washington Association of Building Officials Technical Code Development Committee (lkranz@bellevuewa.gov) requests As Modified by This Public Comment.

**Modify as follows:**

**2018 International Building Code**

**1105.1.1 Automatic doors.** In facilities with the occupancies and building occupant loads indicated in Table 1105.1.1, at least one accessible exterior public entrance shall have at least one door be either a full power-operated door or a low-energy power-operated door. Where the public entrance includes a vestibule, at least one door into and one door out of the vestibule shall meet the requirements of this section.

**Commenter's Reason:** This public comment is intended to address a potentially confusing aspect of the original proposal related to the number of door requiring the automatic opening device. This change will make it clear that only one of the doors into the building requires automatic opening when a bank of doors are provided.

**Cost Impact:** The net effect of the public comment and code change proposal will increase the cost of construction. The cost will be higher because more doors will be required to have automatic opening devices.

**Staff Analysis:** The 2017 ICC A117.1 includes the following language for automatic door openers on vestibules. **404.3.2 Vestibules.** Where an entrance includes a vestibule, at least one exterior door or gate and one interior door or gate in the vestibule shall have the same type of automatic door or gate opener.
Proposed Change as Submitted

Proponent: Jim Safranek, representing Safranek Group LLC

2018 International Building Code
Revise as follows

1106.2 Groups I-1, R-1, R-2, R-3 and R-4. Accessible parking spaces shall be provided in Group I-1, R-1, R-2, R-3 and R-4 occupancies in accordance with Items 1 through 4 as applicable.

1. In Group R-2, R-3 and R-4 occupancies that are required to have Accessible, Type A or Type B dwelling units or sleeping units, at least 2 percent, but not less than one, of each type of parking space provided shall be accessible.
2. In Group I-1 and R-1 occupancies, accessible parking shall be provided in accordance with Table 1106.1.
3. Where at least one parking space is provided for each dwelling unit or sleeping unit, in addition to the accessible parking in Items 1 and 2, and at least one accessible parking space shall be provided for each Accessible and Type A unit.
4. Where parking is provided within or beneath a building, accessible parking spaces shall be provided within or beneath the building.

Reason: Purpose: To clarify whether the number of parking space required by item 3 of section 1106.2 are in addition to the minimum required number of accessible parking spaces or are included as part of the minimum required number of accessible parking spaces.

Reason and Substantiation: For groups I-1, R-1, R-2, R-3 and R-4 the required minimum number of accessible parking spaces is either 2% (Group R-2, R-3 and R-4) or per Table 1106.1 (Group I-1 and R-1). Additionally, item 3 in section 1106.2 states, “Where a parking space is provided for each dwelling unit or sleeping unit, at least one accessible parking space shall be provided for each Accessible and Type ‘A’ unit.”. Item 3 does not appear to clarify whether the required parking spaces for Accessible and Type ‘A’ units are included among the required minimum number of accessible spaces (either 2% of provided parking spaces or per Table 1106.1), or, are in addition to the required minimum number of accessible spaces.

For example, given a Group R-2 apartment project with 250 parking stalls for 250 units (1 parking stall per unit), where 5 of the units are Type ‘A’ units and the remaining units are Type ‘B’ units and there are 5 accessible parking spaces provided. Do the requirements of Section 1106.2, item 3 mean the following:

1. that a minimum of 5 accessible parking spaces will be required (250 x 2% = 5, per section 1106.2, item 1) and this also corresponds to the minimum number of required and provided Type ‘A’ units (1106.2, item 3)?
2. or, that in addition to the minimum required accessible parking spaces (5) (section 1106.2, item 1), 5 additional parking spaces will be required for each of the provided Type ‘A’ units (per section 1106.2, Item 3), resulting in a total of 10 accessible parking spaces?

The proposed additional language to item 3 of section 1106.2 seeks to clarify its intent.

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

Whether or not the code change proposal will increase or decrease the cost of construction depends upon how jurisdictions have been interpreting item 3 of section 1106.2.

If jurisdictions have been interpreting that accessible parking spaces required by item 1 of section 1106.2 do not include the accessible parking spaces required by item 3 of section 1106.2 (which must be also be additionally provided), this will not increase construction costs. The reason for this is that the jurisdiction’s interpretation of items 1 and 3 of section 1106.2 is consistent with the code change proposal, that reflects the intent of the code.

If jurisdictions have been interpreting that accessible parking spaces required by item 1 of section 1106.2 include the accessible parking spaces required by item 3 of section 1106.2, this will increase construction costs. The reason for this is that the jurisdiction’s interpretation of items 1 and 3 of section 1106.2 is not consistent with the code change proposal and additional accessible parking spaces and their accompanying accessible access aisles and accessible routes will be required.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: While this item does need to be clarified, this is not the right direction to go for this calculation. The proposed language for Item 3 is effectively doubling up requirements for parking for Groups I-1 and R. The intent is to comply with the most restrictive of the 2010 ADA and the Fair Housing requirements, so this calculation should be the opposite of what is indicated. (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:
Proponent: Dominic Marinelli, representing United Spinal Association (DMarinelli@accessibility-services.com) requests As Modified by This Public Comment.

Modify as follows:

2018 International Building Code

1106.2 Groups I-1, R-1, R-2, R-3 and R-4. Accessible parking spaces shall be provided in Group I-1, R-1, R-2, R-3 and R-4 occupancies in accordance with Items 1 through 4 as applicable.

1. In Group R-2, R-3 and R-4 occupancies that are required to have Accessible, Type A or Type B dwelling units or sleeping units, at least 2 percent, but not less than one, of each type of parking space provided shall be accessible.
2. In Group I-1 and R-1 occupancies, accessible parking shall be provided in accordance with Table 1106.1.
3. Where at least one parking space is provided for each dwelling unit or sleeping unit, in addition to the accessible parking in Items 1 and 2, and at least one accessible parking space shall be provided for each Accessible and Type A unit or the number of accessible parking spaces indicated in Items 1 and 2, whichever is greater.
4. Where parking is provided within or beneath a building, accessible parking spaces shall be provided within or beneath the building.

Commenter's Reason: The language is not clear as to if Item 3 is in addition to Item 1 and 2 or considered separately as a worst case. The committee voted to disapprove that this was additive. This should be cleared up.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction if this is cleared up, this could possible reduce the total number of accessible parking spaces required.
Proposed Change as Submitted

Proponent: Jim Safranek, representing Safranek Group LLC

2018 International Building Code

Revise as follows

1107.7.2 Multistory units. A multistory dwelling unit or sleeping unit that is not provided with elevator service is not required to be a Type A unit or a Type B unit. Where a multistory unit is provided with external elevator service to only one floor, the floor provided with elevator service shall be the primary entry to the unit, shall comply with the requirements for a Type A units or Type B unit, where applicable and, where provided within the unit, a living area, a kitchen and a toilet facility shall be provided on that floor.

Reason: Purpose: One type of Group-R2 multi-family residential project seen in several areas of the United States are apartment buildings consisting solely of multiple, stacked, two-level multistory dwelling units (upper units placed above lower units) using a common-use building stair to access the upper units, instead of using a common-use elevator. For this type of building, per section 1007.7.2 of the 2018 IBC, the individual multistory dwelling units are not required to be Type 'B' units. Therefore, an apartment project consisting solely of a building (or buildings) containing these type of units would not have any Type 'B' units and initially would appear to be exempt from any accessibility requirements. However, section 1107.6.2.2.1 of the 2018 IBC would require that a Type 'A' unit be provided, regardless of the fact that the project did not contain any Type 'B' units. The result of this is a project that did not contain any Type 'B' units and initially appeared to be exempt from any accessibility requirements would be required to provide 'Type A' units and all common-use areas that were initially exempt from accessibility requirements would now be required to comply with applicable accessibility requirements. The purpose of this proposal is to clarify the requirements for Type 'A' units for Group-R2 projects consisting solely of multistory dwelling units without elevator service.

Reason and Substantiation: Where Exception 1 of section 1107.6.2.2.1 permits the number of Type 'A' units to be reduced per section 1107.7, subsection 1107.7.1 (Structures without elevator service), does not address the possibility of multi-level dwelling units in a structure without elevator service. The result of this is that the requirements found in section 1107.7.1 and its subsections, 1107.7.1.1 and 1107.7.1.2 yield units that are classified as Type 'B' units. Additionally, section 1107.7.2 (Multistory units) does identify that a multistory dwelling or sleeping unit not provided with elevator service is not required to be a Type 'B' unit, which mirrors the requirements found in the Fair Housing Act. Section 1107.7.2 also states that a multistory unit with an external elevator service to one floor is required to have the floor of that unit meet Type 'B' requirements. Unfortunately, section 1107.7.2 does not have language such as that found in section 1107.7.1 (“The number of Type 'A' units shall be determined in accordance with Section 1107.6.2.2.1.”) stating how the number of Type 'A' units are determined where multi-level dwelling units occur. Given the lack of any specific requirement clarifying how Type 'A' units are determined for multistory units, the general requirement found in section 1107.6.2.2.1 is then applicable and all multistory units, regardless of whether they have a floor required to comply with Type 'B' requirements, or not (in the case of multistory units without elevator service) are utilized when determining the number of Type 'A' units for a project. This will result in all projects with multistory units being required to have Type 'A' units.

For any Group-R2 project (except those with certain grade conditions and those with nonelevator buildings where certain design flood elevation conditions exist) Type 'B' units will always occur and Type 'A' units will always be required. Given this, it appears overly restrictive that the International Building Code (IBC) require that Type 'A' units and their corresponding accessible common-use areas be provided where Type 'B' units and accessible common-use areas are not required, as is the case for R-2 projects that consist solely of stacked multistory dwelling units without any type of elevator service. Additionally, this requirement for Type 'A' units where Type 'B' units are not provided, greatly exceeds the accessibility requirements found in the Fair Housing Act (FHA). For a project consisting solely of multistory dwelling units without elevator service, the multistory dwelling units as well as their accompanying common-use areas would not be required to comply with the accessibility requirements found in the FHA. While some accessibility requirements found in the IBC and its accompanying accessibility standard ICC A117.1 exceed the requirements found in the FHA, in this circumstance, the IBC would greatly exceed the FHA requirements.

The proposed addition to section 1107.7.2 attempts to address this issue by eliminating the requirement for Type 'A' units at Group-R2 projects where only multistory dwelling units without any type of elevator service are provided.

Cost Impact: The code change proposal will decrease the cost of construction
For multi-family residential projects that consist solely of multistory dwelling units, there will be a reduction in costs where Type 'A' units and accessible common-use areas are not required.
Public Hearing Results

Committee Action: Disapproved
Committee Reason: This code change would be a reduction in the number of Type A units required. This allowance would conflict with what is required in Section 1107.7.1.1. (Vote 14-0)

Assembly Action: None

Individual Consideration Agenda

Public Comment 1:

Proponent: Dominic Marinelli, representing United Spinal Association (DMarinelli@accessibility-services.com) requests As Submitted.

Commenter's Reason: The committee reason for disapproval had two points.
1) This code change would be a reduction in the number of Type A units required.

True, but in minimal situations - This allowance would only be applicable in multi-story townhouses. Type B units are not required in townhouses without elevators because it was considered cost prohibitive to ask for elevators or platform lifts in individual townhouses. It seems appropriate to make this same allowance for Type A units. The definition for multi-story dwelling unit would not let this exception be applied to single story units over a garage - there has to be living space on two or more floors - so for a townhouse with a garage underneath, this would apply for a 3 story unit. Type A units would still be required in apartment building with 20 or more units. With the new sizes in 2017 ICC A117.1 for Accessible and Type A units, there may also be additional costs due to increase in size of turning spaces in each room.

2) This allowance would conflict with what is required in Section 1107.7.1.1.

False - Section 1107.7.1.1 is applicable to single story units in a multi-story building. This allowance would not be a conflict.

Cost Impact: The net effect of the public comment and code change proposal will decrease the cost of construction if these units are exempted in townhouses, this would be a cost savings by not requiring private elevators or platform lifts for access.