

**Code Technology Committee
2010 Final Action Agenda
CLIMBABLE GUARDS**

The following are code changes and public comments to be considered at the 2010 Dallas Final Action Hearings that are related to the CTC Area of Study noted above.

E100 – Page 1
E147 – Page 7
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E100-09/10, Part I
1002.1, 1013.2 (IFC [B] 1002.1, 1013.2)

Proposed Change as Submitted

PART I – IBC MEANS OF EGRESS

1. Add new definition as follows:

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

FIXED SEATING. Furniture or fixture designed and installed for the use of sitting and secured in place including bench-type seats and seats with or without back or arm rests.

2. Revise as follows:

1013.2 (IFC [B] 1013.2) Height. Required guards shall not be less than 42 inches (1067 mm) high, measured vertically above the as follows:

1. From the adjacent walking surfaces;
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches of a required guard, the guard height shall provide a minimum 42 inches measured diagonally between the top of the guard and the nearest edge of the seat surface; or
3. On stairs, from the line connecting the leading edges of the tread ~~treads~~ nosings; and
4. On ramps, from the ramp surface at the guard.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, *guards* on the open sides of *stairs* shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.
2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the *guard* also serves as a *handrail* on the open sides of *stairs*, the top of the *guard* shall not be less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.
3. The guard height in front row assembly seating areas complying shall be in accordance with Section 1028.14.
4. Along *alternating tread devices* and ship ladders, *guards* whose top rail also serves as a *handrail*, shall have height not less than 30 inches (762 mm) and not more than 34 inches (864 mm), measured vertically from the leading edge of the device tread *nosing*.

Reason: The ICC Board established the ICC Code Technology Committee (CTC) as the venue to discuss contemporary code issues in a committee setting which provides the necessary time and flexibility to allow for full participation and input by any interested party. The code issues

are assigned to the CTC by the ICC Board as "areas of study". Information on the CTC, including: meeting agendas; minutes; reports; resource documents; presentations; and all other materials developed in conjunction with the CTC effort can be downloaded from the following website: <http://www.iccsafe.org/cs/cc/ctc/index.html>. Since its inception in April/2005, the CTC has held seventeen meetings - all open to the public.

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

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

The purposes of this proposal are to address several items raised last cycle during consideration of code change E85-07/08 which was approved. In particular, this proposal clarifies what constitutes "fixed seating" and proposes a horizontal distance between an object that reduces the "effective" height of a required guard rather than placing total reliance on the term "adjacent".

Definition: The definition of "fixed seating" provides for a common understanding where the term is used. This was a concern that was raised in Public Comment #2 to E85 which was not successful.

Item #2: The concern addressed in this revision is that of fixed seating, with or without arm rests and with or without back rests including bench seating located within 22" of the guard. This seating provides a potential standing surface which as a result reduces the effective height of the guard. For seating within 22" of the guard, the guard height is to be measured diagonally from the nearest edge of the seat to the top of the guard. This measurement method is currently utilized in Section 1028.14.3. The guard would be required to extend past the "last" seat in a row so that the guard top is 42" above the edge of the last seat.

The distance of 22" utilized in this exception has been determined by CTC to be a reasonable distance for the purpose described.

Item #3: The current text is modified to indicate that the line is to be between the tread nosings. In the case of a single riser, hence a single nosing, a minimum tread depth of 11 inches on the lower walking surface establishes the slope.

Item #4: The guard height at the edge of a ramp is to be measured at the guard without consideration for the ramp slope as the dimensional change in the guard height is relatively insignificant. With a ramp slope towards the guard of 1/12, the highest point 22" from the guard is 1.83 inches above the ramp surface at the guard. If the ramp slope is 1/8, at 22" from the guard, the ramp surface is 2.75 inches above the ramp surface at the guard.

IBC Exception 3: The provisions for guard reduction for front row seating are primarily intended to accommodate the sight line for seated occupants- see section 1028.14.2. The seating within 22 inches of the guards elsewhere would necessitate an increase in the required guard height as indicated in **Item #2**.

ICCFILENAME:Heilstedt-E3-1013.2

Public Hearing Results

PART I IBC MEANS OF EGRESS

Committee Action:

Disapproved

Committee Reason: In Section 1013.2, Item 2, there was no substantiation for the 22 inch separation between the fixed seating and the guard. The task force needs to work with experts in assembly seating. The front row concept does not address all the issues for the line of site in venues such as sports stadiums where the event is over the field and not a point.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Paul K. Heilstedt, PE, Hon. AIA, Chair, representing ICC Code Technology Committee (CTC); Ed Roether, representing Populous (Formerly HOK Sport Venue Event) requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

1013.2 (IFC [B] 1013.2) Height. Required guards shall not be less than 42 inches (1067 mm) high, measured vertically as follows:

1. From the adjacent walking surfaces;
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches measured horizontally of a required guard, the guard height shall provide a minimum 42 inches measured diagonally between the top of the guard and the nearest edge of the seat surface;
3. On stairs, from the line connecting the leading edges of the tread nosings; and
4. On ramps, from the ramp surface at the guard.

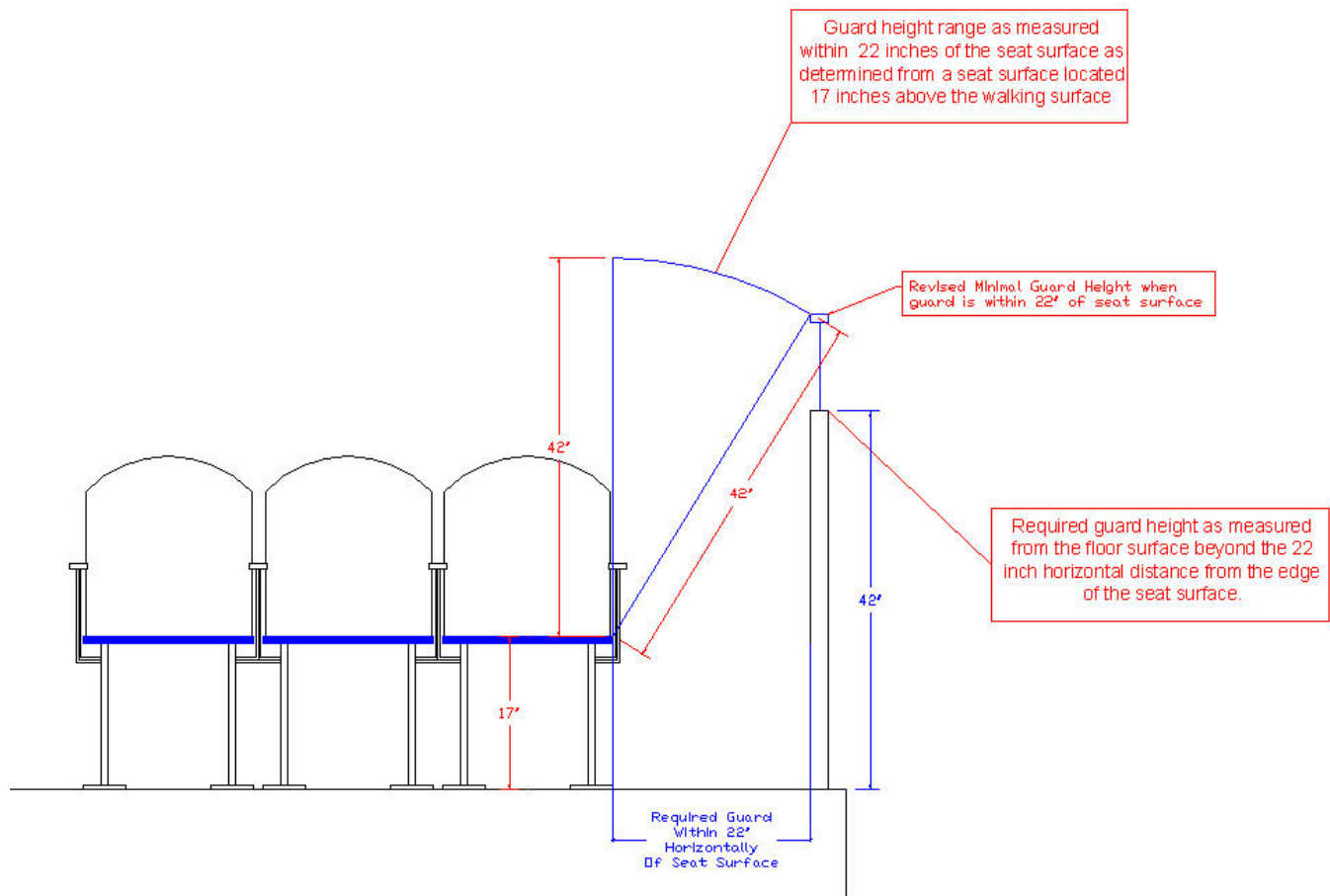
Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, *guards* on the open sides of *stairs* shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.
2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the *guard* also serves as a *handrail* on the open sides of *stairs*, the top of the *guard* shall not be less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.
3. The guard height in ~~front row~~ assembly seating areas ~~complying shall comply~~ with Section 1028.14.
4. Along *alternating tread devices* and ship ladders, *guards* whose top rail also serves as a *handrail*, shall have height not less than 30 inches (762 mm) and not more than 34 inches (864 mm), measured vertically from the leading edge of the device tread nosing.

Commenter's Reason: As noted by the code committee, there was some confusion as to how to make the measurements as well as the need to coordinate these changes with experts in assembly seating. In response, the CTC has partnered with the proponent of code change E147 who is an expert in assembly seating. Further, the CTC provides the following illustrations which show the relationship between the height of the guard and its proximity to the seating surface. This comment should be considered with E147.

If the code change is approved, the illustrations is intended to be added to the IBC Commentaries. The following illustrates the applications of the code requirements:

Elevation view of individual seat configuration, IBC Section 1013.2, Item 2:



Public Comment 2:

Stephen Thomas, Colorado Code Consulting, LLC, representing Colorado Chapter ICC requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

1013.2 (IFC [B] 1013.2) Height. Required guards shall not be less than 42 inches (1067 mm) high, measured vertically above the as follows:

1. From the adjacent walking surfaces;
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches of a required guard, the guard height shall provide a minimum 42 inches measured diagonally between the top of the guard and the nearest edge of the seat surface or
3. On stairs, from the line connecting the leading edges of the tread nosings; and

4.3. On ramps, from the ramp surface at the guard.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, *guards* on the open sides of *stairs* shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.
2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the *guard* also serves as a *handrail* on the open sides of *stairs*, the top of the *guard* shall not be less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading edges of the treads.
3. The guard height in ~~front row~~ assembly seating areas complying shall be in accordance with Section 1028.14.
4. Along *alternating tread devices* and ship ladders, *guards* whose top rail also serves as a *handrail*, shall have height not less than 30 inches (762 mm) and not more than 34 inches (864 mm), measured vertically from the leading edge of the device tread *nosing*.

Commenter's Reason: When jurisdictions start adopting the 2009 edition and see the fixed seating requirement, they cringe at the enforcement issues surrounding the guard that would now be 5 feet tall in areas that the a bench or some type of seating surface is attached to the floor. Just because a seat is "fixed" doesn't mean that it is permanent. What happens when the seating is relocated later? Does the guard at the new location need to be increased to 60 inches above the floor? How will the guard at the old location look without the seating? This requirement is unenforceable.

The committees noted that the proposed language needs additional work for the assembly seating requirements. The current language in Section 1028 adequately covers the requirements for guards in assembly spaces. We do not need to revise those requirements. This comment deletes the restriction to the front row assembly seating and addresses all assembly seating in exception 3.

The addition of the fixed seating guards in the 2009 IBC was over restrictive. Whether a seating surface is fixed or movable, a child can still climb over the guard and fall. In fact, children can climb over guards when there is no seating adjacent to a guard. The code cannot be written to protect everyone. We must draw the line at some point and this requirement crossed that line.

Final Action: AS AM AMPC____ D

E100-09/10, Part II

IRC R202, R312.2

Proposed Change as Submitted

PART II – IRC BUILDING/ENERGY

1. Add new definition as follows:

SECTION R202 DEFINITIONS

FIXED SEATING. Furniture or fixture designed and installed for the use of sitting and secured in place including bench-type seats and seats with or without back or arm rests.

2. Revise as follows:

R312.2 Height. Required guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches high measured vertically ~~above the~~ as follows:

1. From the adjacent walking surface;
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches of the required guard, the guard height shall provide a minimum 36 inches measured diagonally between the top of the guard and the nearest edge of the seat surface or;
3. On stairs, from the line connecting the leading edges of the tread treads nosings; and
4. On ramps, from the ramp surface at the guard.

Exceptions:

1. Guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the leading edges of the treads.

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

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

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

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

The purposes of this proposal are to address several items raised last cycle during consideration of code change E85-07/08 which was approved. In particular, this proposal clarifies what constitutes "fixed seating" and proposes a horizontal distance between an object that reduces the "effective" height of a required guard rather than placing total reliance on the term "adjacent".

Definition: The definition of "fixed seating" provides for a common understanding where the term is used. This was a concern that was raised in Public Comment #2 to E85 which was not successful.

Item #2: The concern addressed in this revision is that of fixed seating, with or without arm rests and with or without back rests including bench seating located within 22" of the guard. This seating provides a potential standing surface which as a result reduces the effective height of the guard. For seating within 22" of the guard, the guard height is to be measured diagonally from the nearest edge of the seat to the top of the guard. This measurement method is currently utilized in Section 1028.14.3. The guard would be required to extend past the "last" seat in a row so that the guard top is 42" above the edge of the last seat.

The distance of 22" utilized in this exception has been determined by CTC to be a reasonable distance for the purpose described.

Item #3: The current text is modified to indicate that the line is to be between the tread nosings. In the case of a single riser, hence a single nosing, a minimum tread depth of 11 inches on the lower walking surface establishes the slope.

Item #4: The guard height at the edge of a ramp is to be measured at the guard without consideration for the ramp slope as the dimensional change in the guard height is relatively insignificant. With a ramp slope towards the guard of 1/12, the highest point 22" from the guard is 1.83 inches above the ramp surface at the guard. If the ramp slope is 1/8, at 22" from the guard, the ramp surface is 2.75 inches above the ramp surface at the guard.

IBC Exception 3: The provisions for guard reduction for front row seating are primarily intended to accommodate the sight line for seated occupants- see section 1028.14.2. The seating within 22 inches of the guards elsewhere would necessitate an increase in the required guard height as indicated in **Item #2**.

ICCFILENAME:Heilstedt-E3-1013.2

Public Hearing Results

PART II- IRC B/E

Committee Action:

Disapproved

Committee Reason: The committee feels this does address the issue but it does not address it fully. It will create some gray areas that will require interpretation of what the code intends. This needs more work. The committee suggests the addition of figures would improve the clarity on the intent.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Paul K. Heilstedt, PE, Hon. AIA, Chair, representing ICC Code Technology Committee (CTC); Ed Roether, representing Populous (Formerly HOK Sport Venue Event) requests Approval as Modified

Modify the proposal as follows:

R312.2 Height. Required guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches high measured vertically as follows:

1. From the adjacent walking surface;

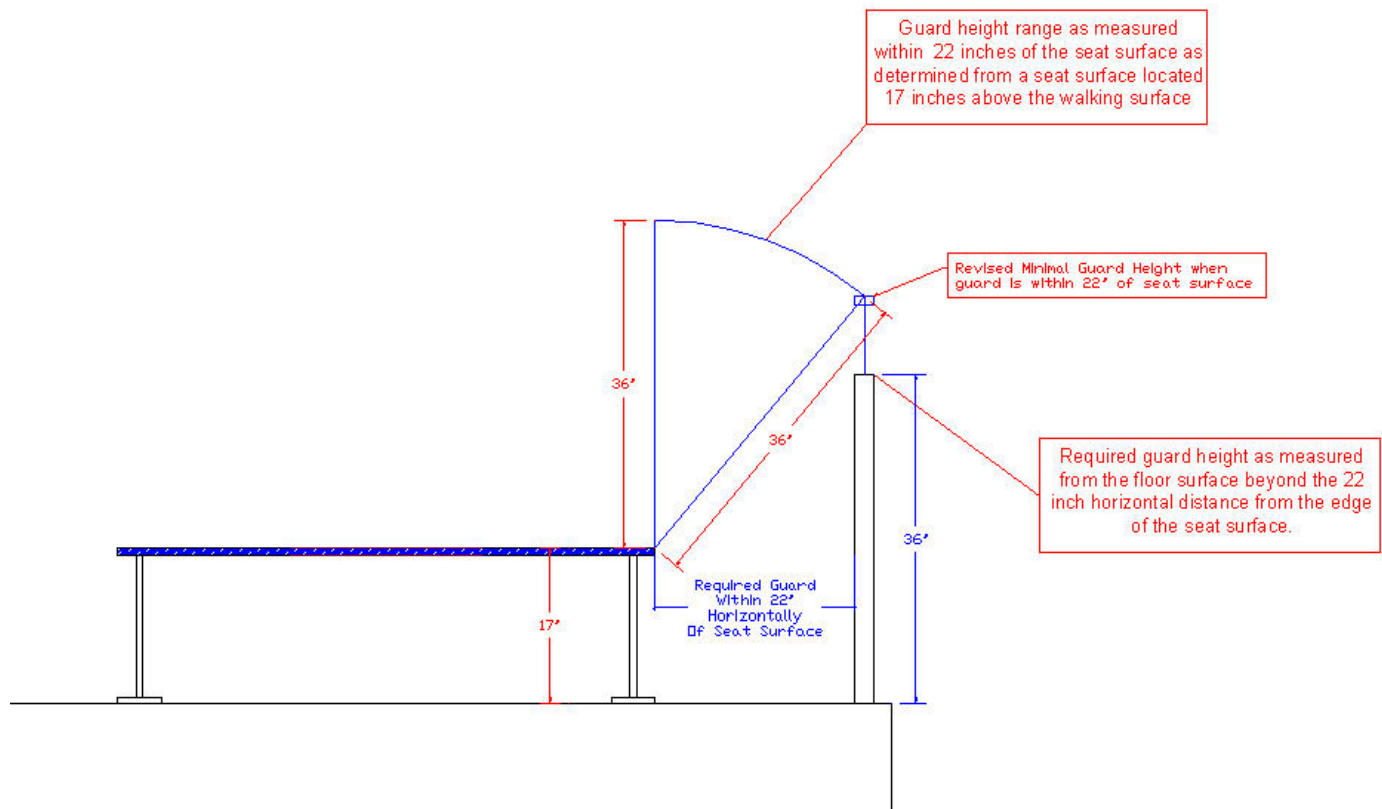
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches measured horizontally of the required guard, the guard height shall provide a minimum 36 inches measured diagonally between the top of the guard and the nearest edge of the seat surface;
3. On stairs, from the line connecting the leading edges of the tread nosings; and
4. On ramps, from the ramp surface at the guard.

Exceptions:

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

Commenter's Reason: As noted by the code committee, there was some confusion as to how to make the measurements as well as the need to coordinate these changes with experts in assembly seating for the IBC requirements. If the code change is approved, the illustrations is intended to be added to the IRC Commentaries. The following illustrates the applications of the code requirements:

Elevation view of bench seat configuration – IRC 312.2, Item 2:



Public Comment 2:

Stephen Thomas, Colorado Code Consulting, LLC, representing Colorado Chapter ICC requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

R312.2 Height. Required guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 36 inches high measured vertically as follows:

1. From the adjacent walking surface;
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches of the required guard, the guard height shall provide a minimum 36 inches measured diagonally between the top of the guard and the nearest edge of the seat surface;
3. On stairs, from the line connecting the leading edges of the tread nosings; and
4. On ramps, from the ramp surface at the guard.

Exceptions:

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

Commenter's Reason: When jurisdictions start adopting the 2009 edition and see the fixed seating requirement, they cringe at the enforcement issues surrounding the guard that would now be nearly 4-1/2 feet tall (i.e., 18" + 36") in areas that the a bench or some type of seating surface is attached to the floor or deck. Just because a seat is "fixed" doesn't mean that it is permanent. What happens when the seating is relocated later? Does the guard at the new location need to be increased to 54 inches above the floor? How will the guard at the old location look without the seating? What if a homeowner adds fixed seating next to a guard? Will they now need a permit to install the seat? This requirement is unenforceable.

The addition of the fixed seating guards in the 2009 IRC was over restrictive. Whether a seating surface is fixed or movable, a child can still climb over the guard and fall. In fact, children can climb over guards when there is no seating adjacent to a guard. The code cannot be written to protect everyone. We must draw the line at some point and this requirement crossed that line.

Final Action: AS AM AMPC_____ D

E147-09/10

1028.14.2 (IFC [B] 1028.14.2)

Proposed Change as Submitted

Proponent: Ed Roether, Populous (Formerly HOK Sport Venue Event), representing self

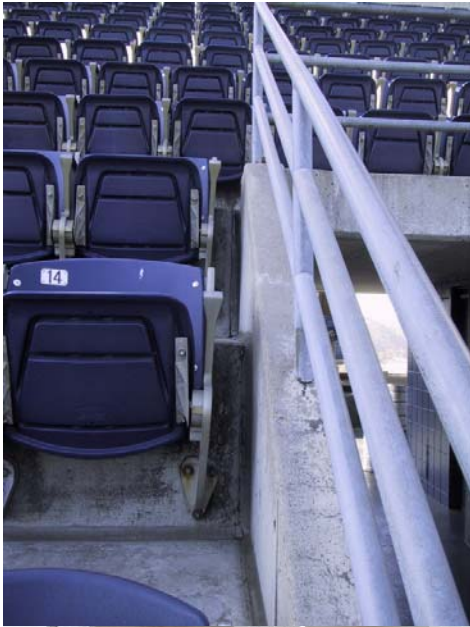
Revise as follows:

1028.14.2 (IFC [B] 1028.14.2) Sightline-constrained guard heights. Unless subject to the requirements of Section 1028.14.3, a fascia or railing system in accordance with the *guard* requirements of Section 1013 and having a minimum height of 26 inches (660 mm) measured vertically above the adjacent walking surfaces, adjacent bench seat or the line connecting the leading edges of the treads shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and the fascia or railing would otherwise interfere with the sightlines of immediately adjacent seating. At *bleachers*, a *guard* must be provided where required by ICC 300.

Exception: The height of the guard shall not be required to be measured vertically above an adjacent automatic or self-rising chair.

Reason: This proposal addresses several things, first it brings clarity to confusion that was created by a change that occurred in the 2009 IBC. The term "seatboard" was replaced with the term "fixed seating" in the 2009 IBC Section 1013.2 on how the height of guards are measured with the stated reason "to clarify the measurement, using common terminology". With respect to assembly seating, the term "fixed seating" does not offer greater clarity, instead it offers significantly more confusion. For example, how do you measure the height of the guard adjacent fixed seats when they are self-rising chairs? (Refer to photographs below.) In assembly seating, fixed seats refers to chairs that are secured to the structure, not that they provide a walking surface. The aisle access way provisions of Section 1028.10 specifically address the clear width between rows of seats where there is automatic or self-rising chairs and chairs with seats that do not move. Therefore, the clarity provided other occupancies unfortunately increased confusion pertaining to assembly seating. Section 1028.14 needs to include how to measure the height of guards so that clarity can be provided assembly seating and still offer other occupancies the clarity needed for them in Section 1013.2. Please note that this proposal does not include any change to Section 1013.2, only to Section 1028.14.

Following are two photographs of self-rising chairs and one of bench seats. The fixed bench seating could serve as a walking surface, however the self-rising chairs are not easily used as a walking surface. 2007 ICC 300 measures vertically above the leading edge of the tread, adjacent walking surface or adjacent bench seat. This proposal maintains how the height of the guard is measured by 1013.2 with the exception of replacing the term "fixed seat" with the term "bench seat" to coordinate with ICC 300 and to enhance clarity that guard height needs to be measured vertically above such seats. Also, the term "bench seat" rather than "seatboard" is commonly used for this type of seating in assembly seating project specifications. An exception was added for self-rising chairs since these seats are not easily used as a walking surface and there is no well defined way to measure these chairs.



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

ICCFILENAME:Roether-E9-1028.14.2

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: Using a walking surface measurement is appropriate to get the level of safety we are looking for when using self rising chairs. The proponents and CTC committee should work together to address this issue of guards heights adjacent to different types of seats in assembly venues.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Paul K. Heilstedt, PE, Hon. AIA, Chair, representing ICC Code Technology Committee (CTC) requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

1028.14.2 (IFC [B] 1028.14.2) Sightline-constrained guard heights. Unless subject to the requirements of Section 1028.14.3, a fascia or railing system in accordance with the *guard* requirements of Section 1013 and having a minimum height of 26 inches (660 mm) ~~measured vertically above the adjacent walking surfaces, adjacent bench seat or the line connecting the leading edges of the treads~~ shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and the fascia or railing would otherwise interfere with the sightlines of immediately adjacent seating. At *bleachers*, a *guard* must be provided where required by ICC 300.

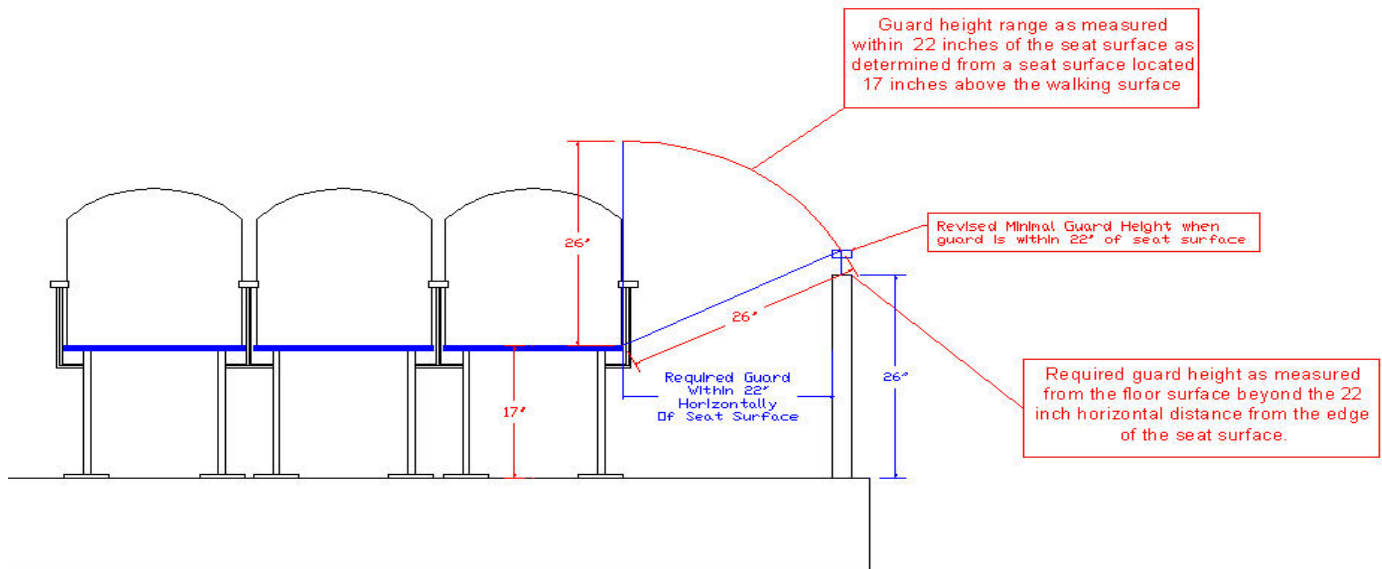
Exception: ~~The height of the guard shall not be required to be measured vertically above an adjacent automatic or self-rising chair.~~ The height of the guard in front of seating shall be measured from the adjacent walking surface.

Commenter's Reason: As noted by the code committee, there was a need to coordinate CTC's proposed E100 and Ed Roether's E147 who is an expert in assembly seating design. This comment is in recognition of that need.

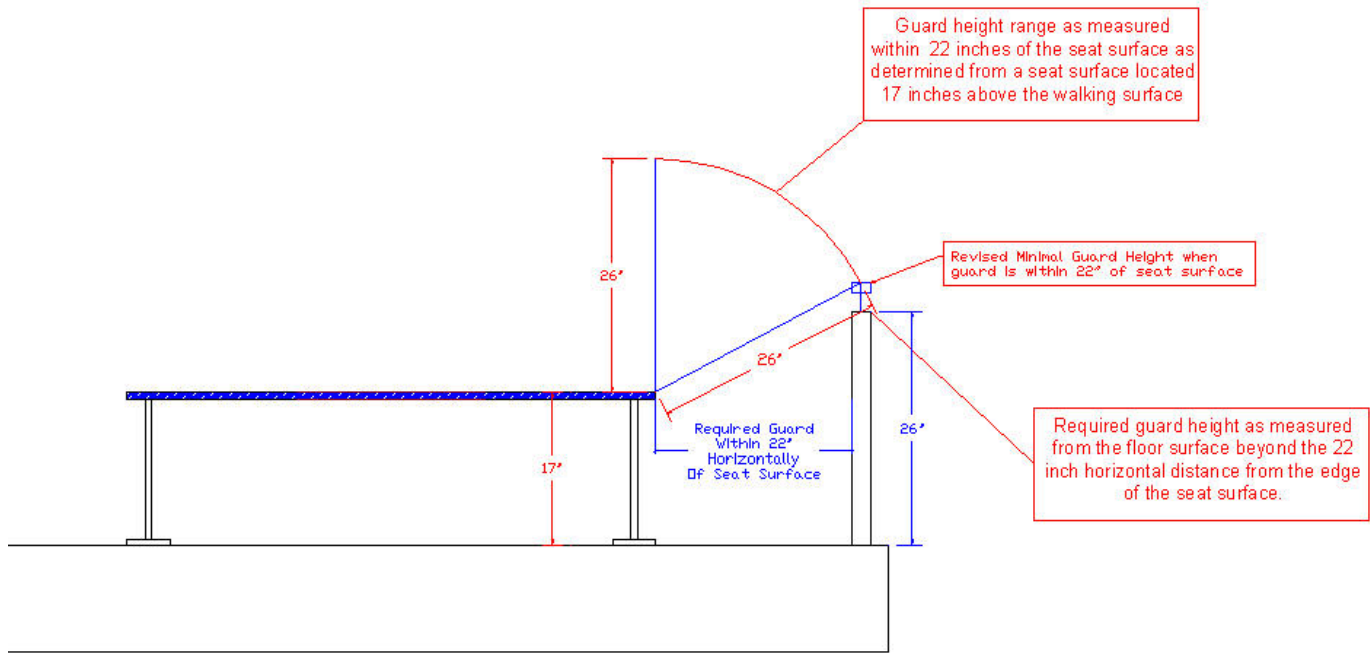
The public comment to this code change, along with the comment to E100, will bring clarity to the required height of guards in assembly seating. Confusion resulted when the term "seatboard" was replaced with "fixed seating" in Section 1013.2. It is recognized that E100 provides the needed clarity to how the height of guards is measured where the line of sight is not a consideration, but line of sight in assembly seating is critical. The revised exception to Section 1028.14.2 addresses line of sight issues. This exception does not alter the height of guards immediately beside or behind seating or other conditions as established in Section 1013.2. The minimum height of 26 inches would be measured in accordance with 1013.2 where the guard would otherwise interfere with the line of sight and the minimum height of 42 inches would be measured in accordance with 1013.2 where there is not interference with line of sight. This comment and that of E100 should be heard together. Please see the illustrations published with the public comment to E100-09/10.

The following illustrate how guards would be measured in assembly seating.

Elevation view of individual seat configuration – guard measurement from Section 1013.2, Item 2 with the 26 inch height from Section 1013.2, Exp. 3 and Section 1028.14.2:



Elevation view of bench seat configuration – guard measurement from Section 1013.2, Item 2 with the 26 inch height from Section 1013.2, Exp. 3 and Section 1028.14.2:



Public Comment 2:

Ed Roether, representing Populous (Formerly HOK Sport Venue Event), requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

1028.14.2 (IFC [B] 1028.14.2) Sightline-constrained guard heights. Unless subject to the requirements of Section 1028.14.3, a fascia or railing system in accordance with the *guard* requirements of Section 1013 and having a minimum height of 26 inches (660 mm) measured vertically above the adjacent walking surfaces, adjacent bench seat or the line connecting the leading edges of the treads shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below. At bleachers, a guard must be provided where required by ICC 300. Where and the fascia or railing would otherwise interfere with the sightlines of immediately adjacent seating guards shall not be less than 26 inches (660 mm) high and be measured vertically as follows:

1. From the adjacent walking surfaces.
2. From a seat surface of adjacent fixed seating, with or without arm or back rests, within 22 inches measured horizontally of a required guard, the guard height shall provide a minimum 26 inches measured diagonally between the top of the guard and the nearest edge of the seat surface
3. On stairs, from the line connecting the leading edges of the tread nosings, and
4. On ramps, from the ramp surface at the guard.

~~At bleachers, a guard must be provided where required by ICC 300.~~

Exception: The height of the guard shall not be required to be measured vertically above an adjacent automatic or self-rising chair. The height of the guard in front of seating shall be measured from the adjacent walking surface.

Commenter's Reason: This proposal provides an alternative to the text proposed by CTC for E147-09/10 and matches their proposed text for how to measure guard height in G100-09/10. Assuming the general reference back to the guard requirements in Section 1013 will let designers/code official understand that you use Section 1013.2 for how to measure the guard height, with Section 1013.2, Exp. 3 sending you to Section 1028.14.2 for the actual height, could be considered vague and circuitous. Sections 1028.14.1 and 1028.14.3 specifically state how the guard is to be measured and its height without bouncing you around in a circle. Putting the text here will be more specific for assembly seating. The sentence about bleachers is existing text and is simply relocated for clarity.

Final Action: AS AM AMPC___ D

Proposed Change as Submitted

Proponent: Rick Davidson, City of Maple Grove, MN

Revise as follows:

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

Guards shall be provided on porches, balconies, and decks enclosed with insect screening when the porch, balcony, or deck floor is located more than 30 inches (762 mm) above the floor or grade below.

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

Exceptions:

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

Reason: The current language referencing "open sided walking surfaces" is vague, undefined and unenforceable. It isn't clear if this means *any* surface upon which someone could walk, defined walking surfaces, or only those surfaces that are part of a dwelling. One could interpret a driveway adjacent a stepped lot line being a regulated "open sided walking surface" and require a guard along its entire length. One could interpret the upper surface of a retaining wall as a walking surface requiring a guard. If a yard is a walking surface, one could interpret egress window wells as needing a guard. Is this what is intended? Conceivably we could have guards crisscrossing residential lots in willy nilly fashion whenever we have elevation changes. If a retaining wall exists on my neighbors property and there is a 3 foot drop from the top of this wall to the grade below and my driveway or my sidewalk is within 36 inches of this retaining wall, is a guard required even if the elevation change does not occur on my property? It would seem so! The code requires that I measure up to 36 inches away from the walking surface. Then, is it his responsibility to install the guard or is it mine? His lot creates the perceived hazard, not mine. If I install the guard on my property, there is still space on the other side of the guard to walk. Is the neighbor also required to install a guard? If my deck is 24 inches above grade below and 2 feet from my lot line and my neighbor has a 16 inch high retaining wall adjacent the lot line, does my deck require a guard? Is it me that creates the hazard or is it my neighbor? Who is responsible for the guard?

The new language addressing insect screening changes the original intent of these terms. When the code states that insect screening shall not be considered a guard, is it implying that windows must have fall protection and that screening does not constitute a guard? One must ask not just how a building official might interpret this language but how might a jury interpret this language if faced with a fall from a window that had only window screening. Might they conclude the code required additional protection?

Last, the code requires that guard height be measured from "adjacent fixed seating". How far must a fixed seat be from the edge of the surface in question before it isn't considered "adjacent"? Must it be in contact with the guard? If I say my house is adjacent to the park, do I mean my house is on the immediate border of the park or some short distance away? And, if I have a fixed seat next to the edge of a walking surface, is it an open walking surface that would require a guard or not? I can no longer walk on the surface near the elevation change.

This is a horribly worded code section that cannot be understood by the public and cannot be easily interpreted by the building official. The language is vague, ambiguous, and confusing. That is the worst kind of language to try to enforce.

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

ICCFILENAME: DAVIDSON-RB-7-R312.1

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The committee feels that although there isn't a specific definition of open sided walking surfaces, it is understood what a walking surface is and the difference is not significant enough to limit to the items proposed. This change would delete the fixed seating

requirements. The committee likes getting rid of open sided walking surface. The proponent should get together with the proponent of E100-09/10, Part II and rework and bring back.

Assembly Action:

None

Individual Consideration Agenda

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

Public Comment 1:

Rick Davidson, representing self, requests Approval as Submitted.

Commenter's Reason: The requirements for guards in the 2006 IRC were clear, succinct, and direct. It read:

***Guards.** Porches, balconies, ramps or raised floor surfaces located more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 36 inches (914 mm) in height. Open sides of stairs with a total rise of more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 34 inches (864 mm) in height measured vertically from the nosing of the treads.*

Guards were only required for "porches, balconies, ramps or raised floor surfaces" and "open sides of stairs".

It was clear that the rule did not apply to retaining walls, landscaping features, driveways, or any other location on the property except for those locations specifically listed.

Then the code was "improved". The language in the 2009 IRC reads:

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

Now the code requires guards "along open-sided walking surfaces". Interpreted literally, virtually any place on the lot, inside or outside of the dwelling could be considered a "walking surface". No longer is the guard requirement applicable to something that is constructed as a part of the dwelling but physical features of the site may also trigger guard requirements. Comments made during the hearings in Baltimore suggested that it was the intent of the language to require guards along retaining walls. This opens the door to requiring guards around window wells and the difficulties that creates. There is no direction given in the language to provide guidance for interpretation and there will be no uniformity in its enforcement.

This is a huge departure from what was required in the 2006 IRC that limited guards to features normally considered part of the dwelling.

Even the IRC Committee is confused about the language. In their reason statement for disapproving this code change they stated: "The committee feels that although there isn't a specific definition of open sided walking surfaces, it is understood what a walking surface is and the difference is not significant enough to limit to the items proposed." Then they further stated: "The committee likes getting rid of open sided walking surface." And last, "The proponent should get together with the proponent of e100-09/10, Part II and rework and bring it back."

The language that is proposed is the same language that was in the first three editions of the IRC. It covered all of those scenarios likely found in residential dwelling construction.

The current language also creates confusion regarding the use of insect screening. The 2006 IRC language was patterned after that found in the IBC and read: "Porches and decks which are enclosed with insect screening shall be equipped with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below." It was clear that the intent was to prohibit screening that was commonly used in screen porches and similar structures from meeting the requirements of a guard.

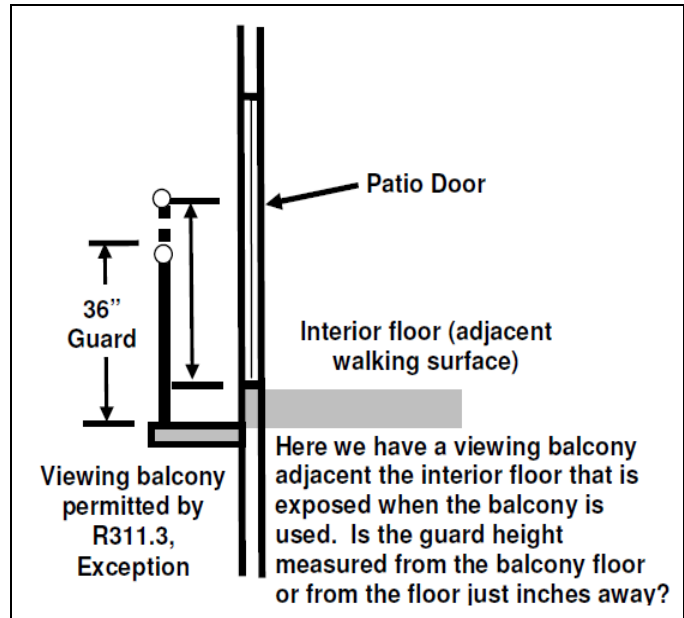
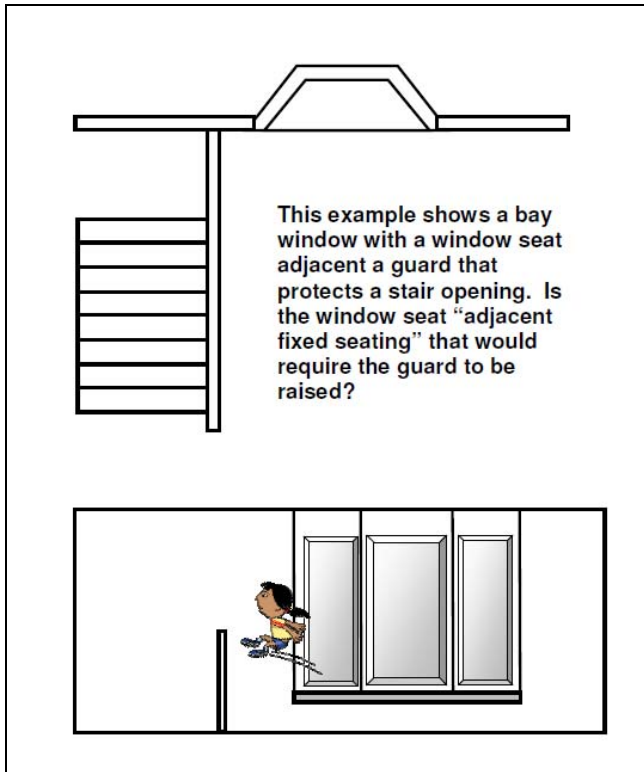
The language in the 2009 IBC has not changed. It continues to read: "1013.4 Screen porches. Porches and decks which are enclosed with insect screening shall be provided with *guards* where the walking surface is located more than 30 inches (762 mm) above the floor or grade below." It is clear that the screening language in the IBC applies only to screen porches.

The new language in the IRC simply states: "Insect screening shall not be considered as a guard." There is no qualifying language that references screen porches. It states that screening can't be used as a guard along "open sided walking surfaces". Now we are back to what constitutes an "open sided walking surface". The language is already being challenged in the courts to include certain windows. Since the most common application of insect screening is for windows, it is reasonable to make that connection. That should not be the direction of the code. The language in the IRC is significantly different than that found in the IBC.

The last issue that the proposal addresses is that of measuring the height of guards from "adjacent fixed seating". There has been no data to support the notion that fixed seating occurring near a guard is dangerous. And isn't it much more likely that moveable seating and other furnishings will be placed adjacent guards also creating a "hazard" and they are unregulated. The 2009 language is a solution looking for a problem. As the rule applies to decks, people have decks so they can sit outside and enjoy the views and fresh air, not the inside of a guard. And it isn't uncommon to have window seats near a guard as shown in one of the following illustrations. The hypocrisy is that the window seat could be next to an open window with no regulation but a guard that may be considered "adjacent" would need to tower 36 inches above the window seat.

Because the code requires that guards be able to resist a single concentrated load of 200 pounds at any point along the top of the guard, attaching a five or six foot tall guard to meet this requirement becomes expensive and unnecessary for residential construction.

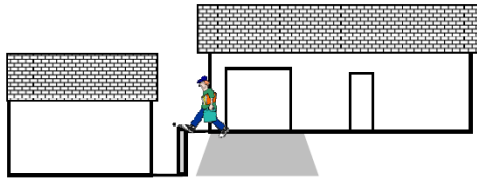
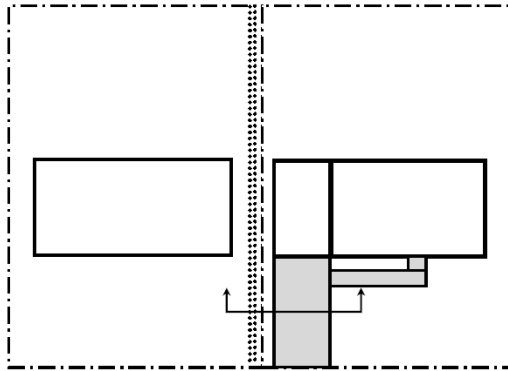
The current language creates all sorts of unintended consequences, is confusing and difficult to interpret, and removed language from the code that was never shown to be a problem.



This picture illustrates two issues that arise with the current language on guards. First, we have a walking surface that is more than 30 inches above a point within 36 inches of the open side of the walking surface. Therefore a guard 36 inches high is required. Then we have adjacent fixed seating in the form of the seating around the edge of the hot tub. The seating is 42 inches above the walking surface. Therefore the total height of the guard at this location will be 78 inches. The IRC requires that the guard be able to resist a "single concentrated load (of 200 pounds) applied in any direction along the top." This will require some very substantial mounting hardware to attach the guard to the patio to resist such forces.



Each of these photos illustrates a possible application of a guard next to adjacent fixed seating. In all of the pictures one could interpret the code to require that the guard be 36 inches higher than the adjacent fixed seating. In the photo to the lower left, the edge of the hot tub is approximately 6 inches above the floor of the deck. Therefore the railing should be raised for that portion of the railing that is considered "adjacent the fixed seating.



If the retaining wall is more than 30 inches high, must a guard be placed along the driveway which creates an open sided walking surface if the edge of the driveway is less than 36 inches from the wall? The retaining wall is on the neighbor's property. Who must install the guard, the owner creating the hazard or the owner creating the walking surface? Could the owner of the driveway place a guard along the driveway or must it be installed at the lot line?

Public Comment 2:

Gerald Anderson, City of Overland Park, KS, requests Approval as Modified by this Public Comment.

Replace proposal as shown:

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

Guards shall be provided on porches, balconies, and decks enclosed with insect screening when the porch, balcony, or deck floor is located more than 30 inches (762 mm) above the floor or grade below.

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

Exceptions:

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

Commenter's Reason: As the original proponent has stated, the current code language regarding "open sided walking surfaces" is vague, undefined and unenforceable. The primary problem is that the code doesn't restrict where one might find an open sided walking surface. As the code is currently written one might find an open sided walking surface along a small retaining wall out in the middle of a yard. The code has never required a guard in such a space. This change is needed in order to more clearly specify where guards are required.

Final Action: AS AM AMPC____ D