

# ICC STANDARD on BLEACHER SEATING

## Draft #3

*Staff notes indicated in italics.*

### Chapter 1

## Application and Administration

#### 101 Purpose

The purpose of this standard is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, and safety to life and property relative to the construction, alteration, repair, operation, and maintenance of new and existing temporary and permanent bench bleachers, folding and telescoping seating, grandstands, and stands (all referred to as “tiered seating”). This standard is intended for adoption by government agencies and by organizations setting model codes to achieve uniformity in the technical design criteria in building codes and other regulations.

**101.1 Applicability.** The construction of new temporary and permanent tiered seating shall comply with Chapters 1 through 3. Existing temporary and permanent tiered seating shall comply with Chapters 1 and 4. Temporary installations are those which are erected for a period of less than 180 days in a calendar year. *(Revised IBC 3103.1)*

**101.2 Appendices.** Provisions in the appendices shall not apply unless specifically adopted. *(Delete)*

#### 102 Compliance alternatives

Nothing in this standard is intended to prevent the use of designs, products, or technologies as alternatives to those prescribed by this standard, where equivalence is provided and such equivalency is approved by the administrative authority adopting this standard.

#### 103 Conventions

**103.1 Dimensions.** Dimensions that are not stated as "maximum" or "minimum" are absolute. All dimensions are subject to conventional industry tolerances.

**103.2 Graphics.** Unless specifically stated otherwise, figures included herein are not considered part of the standard and are provided for informational purposes only. *(Delete)*

## 104 Referenced standards ( *Delete* )

**104.1 General.** The Standards listed in Section 104.2 are referenced in this document. Where requirements in this standard differ from those of these referenced standards, the requirements of this standard shall apply. (*Delete*)

## 105 Inspection

**105.1 Installation/construction inspection re quired.** After construction or installation, an inspection by a qualified person shall be performed to evaluate compliance with this standard.

**105.2 Yearly inspection required.** All tiered seating shall be inspected at least once a year by a qualified person in order to verify that the structure is maintained in compliance with the provisions of this standard. All folding and telescopic seating shall be inspected to evaluate compliance with the manufactures installation and operational instructions, including an inspection during the opening and closing of such seating.

**Exception.** Existing tiered seating shall be inspected in accordance with the provisions of Chapter 4.  
(*Section 105.2 created by staff at the direction of the committee. Combined 105.2 and 105.3 of Draft 2.*)

## 106 Definitions

**106.1 General.** For the purpose of this standard, the terms listed in Section 106.5 have the indicated meaning.

**106.2 Terms defined in referenced standards.** Terms not defined in this section, but specifically defined in a referenced standard, shall have the specified meaning from the referenced standard, unless otherwise stated.

**106.3 Undefined terms.** The meaning of terms not specifically defined in this document or in referenced standards shall have ordinarily accepted meanings such as the context implies. (*IBC 201.4*)

**106.4 Interchangeability.** Words, terms, and phrases used in the singular includes the plural and the plural the singular.

**106.5 Defined Terms.** (*All terms used in body of standard except “revie wing stands”*)

**bleachers:** Tiered seating facilities.

**building code:** The locally adopted building code.

**code official:** The officer or other designated authority charged with the administration and enforcement of this standard, or a duly authorized representative.

**electrical code.** The locally adopted electrical code.

**elevated tiered seating.** Tiered seating where the lowest row of seating must be accessed by a ramp or stairs.

**existing tiered seating.** Tiered seating that exists in place prior to the initial adoption of this standard.

**folding and telescopic seating:** Tiered seating facilities having an overall shape and size that is capable of being reduced for purposes of moving or storing.

**footboards:** A walking surface of tiered seating.

**grandstand:** Tiered seating facilities.

**guard:** A building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level.

**handrail:** A horizontal or sloping rail intended for grasping by the hand for guidance or support.

**means of egress:** A continuous and unobstructed path of vertical and horizontal egress travel from any point in a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge. For the purposes of this standard, the travel within tiered seating is considered exit access. *(Staff added last sentence to IBC definition)*

**press box:** A limited size structure attached to tiered seating not for public use.

**reviewing stands:** Elevated platforms that accommodate not more than 50 persons. *(Delete, term not used in standard)*

**smoke protected seating:** Seating served by a means of egress that is not subject to smoke accumulation within or under a structure.

**seatboards:** The seating surface of tiered seating.

**tiered seating:** Seating occurring on more than one elevation in the same structure and includes bleachers, folding and telescoping seating, and grandstands.

**transition area:** Changes in slope of tiered seating sections or accessing a platform or balcony from tiered seating.

## Chapter 2 Construction

**201.1 General.** The construction or installation of new tiered seating shall comply with the provisions of this chapter.

### **201.2 Permitted materials.**

**201.2.1 Combustibility and Flamespread.** Tiered seating, including press boxes, shall be permitted to be constructed of combustible or noncombustible materials. Tiered seating shall not be considered

interior finish relative to the application of the building code.

**201.2.2 Durability.** Materials used in the construction of exterior tiered seating shall be weather resistant. Where wood is used, it shall be naturally durable or preservative-treated wood as defined in the building code or other approved material. Where ferrous metal is used it shall be protected from corrosion. Fasteners shall consist of aluminum, copper, zinc, zinc-coated, or other approved corrosion-resistant coatings or materials.

**201.2.2.1 Interior corrosive environment.** Tiered seating located in interior corrosive environments, such as those located in conjunction with indoor pools, shall be protected from corrosion.

*(By staff, as directed by committee)*

### **201.3 Structural.**

**201.3.1 Live loads.** Tiered seating shall be designed to support the live loads listed in Table 201.3.1.

**Table 201.3.1  
Tiered Seating Live Loads**

<b>Tiered seating element</b>	<b>Live Load</b>
Structural support	100 psf (4.788kN/m <sup>2</sup> ) ( <i>IBC Table 1607.1</i> )
Footboards and seatboards (vertical)	120 lb/linear ft. (1.75kN/M)
Footboards and seatboards (horizontal sway load)	24 lb/linear ft (0.35kN/m) of seatboard parallel to the seats and 10 lb/linear foot (0.146kN/m) of seatboard perpendicular to the seats. These loads need not be assumed to act concurrently and need not be applied simultaneously with other lateral forces such as wind or seismic loads. ( <i>IBC Table 1607.1 note c</i> )
Treads	Stair treads and aisle stair treads shall be designed to resist a minimum concentrated load of 300 pounds on an area of 4 square inches ( <i>IBC Table 1607.1 Note f</i> )
Press boxes (usable floor and roof levels)	50 psf (2.394kN/m)
Handrails and guards, uniform load	Handrail assemblies and guards shall be designed to resist a load of 50 pounds per linear foot (pound per foot) (0.73 kN/m) applied in any direction at the top and to transfer this load through the supports to the structure. ( <i>IBC 1607.7.1</i> )
Handrails and guards, concentrated load	Handrail assemblies and guards shall be able to resist a single concentrated load of 200 pounds (0.89 kN), applied in any direction at any point along the top, and have attachment devices and supporting structure to transfer this loading to appropriate structural elements. This load need not be assumed to act concurrently with the uniform load. ( <i>IBC 1607.7.1.1</i> )
Guards, infill components	Intermediate rails (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds (0.22 kN) on an area equal to 1 square foot (305 mm <sup>2</sup> ) including openings and space between rails. Reactions due to this loading are not required to be superimposed with the uniform loads or concentrated loads. ( <i>IBC 1607.7.1.2</i> )

**201.3.2 Other loads:** Tiered seating and press boxes subjected to wind, snow, seismic and other non live loads shall also be designed in accordance with the building code.

**201.3.3 Stress increases.** Where handrails and guards are designed in accordance with the provisions for allowable stress design (working stress design) exclusively for the live loads specified in Section 201.3.1, the allowable stress for the members and their attachments are permitted to be increased by one-third. Stresses permitted in the design standards of the various materials shall be permitted to be increased by one third due to sway or wind loads or by a combination of sway or wind loads and vertical loads, provided that no such increases shall be allowed for stresses due to vertical loads alone. All other allowable stress increases relative to the design of the tiered seating shall be in accordance with the building code.*(Revised IBC 1607.7.1.3)*

**201.3.4 Foundations.** A foundation, designed to support the superimposed live loads of Section 201.3.1 and other loads of Section 201.3.2, shall be provided. Foundations shall extend below the frost level as required by the building code.

**Exceptions.**

1. Tiered seating that is directly supported on undisturbed soil, which is adequate to support the superimposed loads.
2. Slab supported systems shall not be required to extend foundations to the frost line.

**201.3.5 Deflections.** Structural members supporting the seating shall be limited to a live load deflection of 1/200 of the span.

**Exception.** Deflection of members in folding and telescopic seating shall not be limited.

**201.4 Electrical.** The electrical system shall comply with the electrical code.

**201.5 Fire protection.** Fire protection systems shall be provided where required by the building code.

**201.6 Spaces beneath seats.** Spaces underneath seats shall be kept free from combustible and flammable materials. Spaces underneath seats shall not be occupied or utilized for purposes other than means of egress unless enclosed in one hour fire resistance rated construction.

**Exception.** Toilet rooms and ticket booths less than 100 square feet in area.

**201.6 Accessibility:** Tiered seating shall be accessible as required the building code.

**201.7 Roof height.** A smoke-protected assembly seating area with a roof shall have the lowest portion of the roof deck not less than 15 feet (4572 mm) above the highest aisle or aisle accessway.

**Exception:** A roof canopy in an outdoor stadium shall be permitted to be less than 15 feet (4572 mm) above the highest aisle or aisle accessway provided that there are no objects less than 80 inches (2032 mm) above the highest aisle or aisle accessway.

# Chapter 3

## Egress

**301.1 General:** The means of egress for new tiered seating construction or installations shall comply with this chapter.

**301.2 Occupant load:** Where bench seating is used, the number of persons shall be based on one person for each 18 inches (457 mm) of length of the bench. Where individual seats are provided, the occupant load shall be based on one person per seat. *(IBC 1008.14)*

**301.3 Required means of egress:** Tiered seating shall be provided with the minimum number of means of egress from the seating area based on the following occupant loads and in accordance with the calculated width requirement for egress capacity:

Occupant Load	Required means of egress
0-250	1
251-750	2
751- 2500	3
2500+	4

**301.3.1 Room or space means of egress:** Tiered seating shall be provided with the required means of egress in accordance with Section 301.3. The rooms or spaces in which the tiered seating is located shall be provided with the required means of egress in accordance with the building code.

*(Added by staff, as directed by committee)*

**301.4 Travel distance.** The travel distance from the most remote point on tiered seating to an exit shall comply with the building code. Where aisles are provided for seating, the distance shall be measured along the aisles and aisle accessway without travel over or on the seats. *(IBC 1008.6)*

**301.5 Required width.** The clear width of aisles and other means of egress shall comply with Section 301.5.1 where smoke-protected seating is not provided and with Section 301.5.2 or 301.5.3 where smoke-protected seating is provided. The clear width shall be measured to walls, edges of seating and tread edges except for permitted projections. There shall be no obstructions in the required width of aisles except for handrails as provided in Section 301.11.7. *(IBC 1008.5 & 1008.7.6)*

**301.5.1 Without smoke protected seating.** The clear width of the means of egress for tiered seating without smoke protection shall provide sufficient capacity in accordance with all of the following, as applicable: *(IBC 1008.5.1)*

1. At least 0.3 inch (7.6 mm) of width for each occupant served shall be provided on aisle stairs having risers—heights 7 inches (178 mm) or less and tread depths 11 inches (279 mm) or greater, measured horizontally between tread nosing.
2. At least 0.005 inch (0.127 mm) of additional aisle stair width for each occupant shall be provided for each 0.10 inch (2.5 mm) of riser height above 7 inches (178 mm).
3. Where egress requires aisle stair descent, at least 0.075 inch (1.9 mm) of additional width for each occupant shall be provided on those portions of aisle stair width where a handrail is not located within a horizontal distance of 30 inches (762 mm).

4. Ramped means of egress, where slopes are steeper than one unit vertical in 12 units horizontal (8 -percent slope), shall have at least 0.22 inch (5.6 mm) of clear width for each occupant served. Level or ramped means of egress, where slopes are not steeper than one unit vertical in 12 units horizontal ( 8 -percent slope), shall have at least 0.20 inch (5.1 mm) of clear width for each occupant served.

**301.5.2 Indoor smoke-protected seating.** The design of the indoor smoke protected seating system shall be in accordance with the building code. The means of egress shall be designed in accordance with this section. The clear width of the means of egress for smoke-protected seating shall be not less than the occupant load served by the egress element multiplied by the appropriate factor in Table 301.5.2. The total number of seats specified shall be those within a single space and exposed to the same smoke-protected environment. Interpolation is permitted between the specific values shown.  
(IBC 1008.5.2)

**TABLE 301.5.2**  
**WIDTH OF AISLES FOR SMOKE-PROTECTED SEATING**  
(IBC Table 1008.5.2)

TOTAL NUMBER OF SEATS IN THE SMOKE- PROTECTED SEATING	Inches of clear width per seat served			
	Stairs and aisle steps with handrails within 30 inches	Stairs and aisle steps without handrails within 30 inches	Passageways, doorways and ramps not steeper than 1 in 10 slope	Ramps steeper than 1 in 10 slope
Equal to or less than 2,000	0.300	0.375	0.200	0.220
5,000	0.200	0.25	0.150	0.165
10,000	0.130	0.163	0.100	0.110
15,000	0.096	0.120	0.070	0.077
20,000	0.076	0.095	0.056	0.062
Equal to or greater than 25,000	0.060	0.075	0.044	0.048

**301.5.3 Outdoor smoke - protected seating.** The clear width in inches (mm) of aisles and other means of egress for outdoor smoke-protected seating shall be not less than the total occupant load served by the egress element multiplied by 0.08 (2.0 mm) where the egress is by aisles , ramps with a slope greater than 1:10 and aisle stairs and multiplied by 0.06 (1.52 mm) where egress is by ramps with a slope equal to or less than 1:10.. ( Revised IBC 1008.5.3)

**Exception:** The clear width in inches (mm) of aisles and other means of egress shall be permitted to comply with Section 301.5.2 for the number of seats in the outdoor smoke-protected assembly where Section 301.5.2 permits less width.

**301.6 Aisles.** The minimum width of aisles shall be in accordance with Section 301.5 but not less than that computed in accordance with this section. An aisle is not required in seating facilities where all of the following conditions exist: *(IBC 1008.7)*

1. Seats are without backrests.
2. The rise from row to row does not exceed 6 inches (152 mm) per row.
3. The row spacing does not exceed 28 inches (711 mm) unless the seat boards and footboards are at the same elevation.
4. The number of rows does not exceed 16 rows in height.
5. The first seating board is not more than 12 inches (305 mm) above the ground or floor below or a cross aisle.
6. Seat boards have a continuous flat surface.
7. Seat boards provide a walking surface with a minimum width of 11 inches (279 mm).
8. Egress from seating is not restricted by rails, guards or other obstructions.

**301.6.1 Minimum aisles width.** The minimum clear width of aisles shall be as follows: *(IBC 1008.7.1)*

1. Forty-eight inches (1219 mm) for aisle stairs having seating on each side.

**Exception:** Thirty-six inches (914 mm) where the aisle does not serve more than 50 seats.

2. Thirty-six inches (914 mm) for aisle stairs having seating on only one side.
3. Twenty-three inches (584 mm) between an aisle stair handrail or guard and seating where the aisle is subdivided by handrail.
4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

**Exceptions:**

1. Thirty-six inches (914 mm) where the aisle does not serve more than 50 seats.
2. Thirty inches where the aisle does not serve more than 14 seats. *(IBC 2001 Supp 1008.7.1)*
5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.

**Exception.** Thirty inches where the aisle does not serve more than 14 seats. *(IBC 2001 Supp 1008.7.1)*

6. Twenty-three inches (584 mm) between an aisle stair handrail and seating where an aisle does not serve more than five rows on one side.

**301.6.2 Aisle width.** The aisle width shall provide sufficient egress capacity for the number of persons accommodated by the catchment area served by the aisle. The catchment area served by an aisle is that portion of the total space that is served by that section of the aisle. In establishing catchment areas, the assumption shall be made that there is a balanced use of all means of egress, with the number of persons in proportion to egress capacity. (*IBC 1008.7.2*)

**301.6.3 Converging aisles.** Where aisles converge to form a single path of egress travel, the required egress capacity of that path shall not be less than the combined required capacity of the converging aisles. (*1008.7.3*)

**301.6.4 Uniform width.** Those portions of aisles, where egress is possible in either of two directions, shall be uniform in required width. (*IBC 1008.7.4*)

**301.6.5 Assembly aisle termination.** Each end of an aisle shall terminate at a cross aisle, vomitory or concourse having access to an exit. (*Revised IBC 1008.7.5*)

**Exceptions:** Dead end aisles terminating at a cross aisle or vomitory providing access to an exit at only one end and complying with any one of the following shall be permitted:

1. In non-smoke protected seating, dead ends in vertical aisles shall not exceed a distance of 16 rows.
2. In non-smoke protected seating dead-end aisles longer than 20 feet (6096 mm) are permitted where seats beyond the 20-foot (6096 mm) dead-end aisle are no more than 24 seats from another aisle, measured along a row of seats having a minimum clear width of 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row.
3. For smoke-protected seating, where seats beyond a 21-row dead-end aisle are not more than 40 seats from another aisle, measured along a row of seats having an aisle accessway with a minimum clear width of 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat above seven in the row.

**301.7 Aisle walking surfaces.** Aisles with a slope not exceeding one unit vertical in eight units horizontal (12.5-percent slope) shall consist of a ramp having a slip-resistant walking surface. Aisles with a slope exceeding one unit vertical in eight units horizontal (12.5-percent slope) shall consist of a series of risers and treads that extend across the full width of aisles and comply with this section. (*IBC 1008.9*)

**301.7.1 Treads.** Tread depths shall be a minimum of 11 inches (279 mm). The tolerance between adjacent treads shall not exceed 0.188 inch (4.8 mm). Treads shall be solid. (*Revised IBC 1008.9.1*)

**Exceptions:**

1. Where a single tread is constructed of two or more elements, the gap between adjacent tread surfaces shall not exceed 0.25 inch.
2. Treads located in transition areas of tiered seating in accordance with Section 301.7.4.
3. Where necessitated by changes in the gradient of adjoining seating area or to maintain adequate sightlines, tread depths may be non-uniform. Where non-uniformities exceed 0.188 inch (4.8 mm) between adjacent treads, the exact location of such uniformities shall be indicated with a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the non-uniform tread. Such stripe shall be a minimum of 1 inch (25.4 mm) wide and a maximum of 3 inches (76.2 mm) wide. The edge marking shall be distinctly different to that required by Section 301.7.3.

**301.7.2 Risers.** Where the gradient of aisle stairs is to be the same as the gradient of adjoining seating areas, the riser height shall not be less than 4 inches (102 mm) nor more than 8 inches (203 mm). The tolerance between the largest and smallest riser shall not exceed 0.375 inches in any flight. Risers shall be solid. (*Revised IBC 1008.9.2*)

**Exceptions:**

1. Solid risers are not required in telescopic and folding seating where necessary to maintain opening and closing operational clearances.
2. Risers located in transition areas of tiered seating in accordance with Section 301.7.4.
3. Where necessitated by changes in the gradient of adjoining seating area and to maintain adequate sightlines, riser height may be non-uniform. Where non-uniformities exceed 0.188 inch (4.8mm) between adjacent risers, the exact location of such uniformities shall be indicated with a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the non-uniform tread. Such stripe shall be a minimum of 1 inch (25.4 mm) wide and a maximum of 3 inches (76.2 mm) wide. The edge marking shall be distinctly different to that required by Section 301.7.3.
4. Riser heights not exceeding 9 inches shall be permitted where they are necessitated by the slope of the adjacent seating areas to maintain sightlines. (*IBC 1008.9.2 Exception #2*).

**301.7.3 Tread contrasting marking stripe.** A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch (25.4 mm) wide and a maximum of 3 inches (76.2 mm) wide. This marking is required in addition to that required by Section 301.7.4. (*Revised IBC 1008.9.3*)

**Exception:** The contrasting marking stripe is permitted to be omitted where tread surfaces are such that the location of each tread is readily apparent when viewed in descent.

**301.7.4 Transitions in tiered seating.** Treads located in transition areas between adjacent tiered seating elements or on to or off of tiered seating shall be a minimum of 11 inches. Risers located within areas of transition shall be a minimum of 4 inches and a maximum of 8 inches. The dimensional uniformity requirements of Sections 301.7.1 and 301.7.2 shall apply within the area of transition with the following exceptions:

1. The riser onto or off of the area of transition need not be of uniform height to the risers on the tiered seating above or below the transition.
2. The tread onto or off of the area of transition need not be of uniform depth to the treads on the tiered seating above or below the transition.
3. A mid-aisle handrail shall be provided. This handrail shall meet the requirements of 301.11, except the handrail shall extend the full length of the transition and a minimum of one tread depth, parallel to the run of the aisle stairs, above and below the upper-most and lower-most riser in the transition. Where extensions of the aisle handrail would interfere with adjacent means of egress, the handrail extensions shall terminate at the riser

**Exception:** A mid aisle handrail is not required where Handrails shall be provided on both sides of the transition area where access to aisle accessway will not be effected.

4. Where tread or riser non-uniformities exceed 0.188 inches (4.8 mm), the exact location of such non-uniformities shall be indicated by a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the non-uniform tread or riser. All other treads and risers within the transition area must comply with the requirements of Section 301.7.3.

**301.8 Aisle accessways.** Where seating rows have 14 or fewer seats, the minimum clear aisle accessway width shall not be less than 12 inches (305 mm) measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. Where chairs have automatic or self-rising seats, the measurement shall be made with seats in the raised position. Where any chair in the row does not have an automatic or self-rising seat, the measurements shall be made with the seat in the down position. For seats with folding tablet arms, row spacing shall be determined with the tablet arm down. *(IBC 1008.8)*

**301.8.1 Dual access.** For rows of seating served by aisles or doorways at both ends, there shall not be more than 100 seats per row. The minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond 14 seats, but the minimum clear width is not required to exceed 22 inches (559 mm). *(IBC 1008.8.1)*

**Exceptions:**

1. For smoke-protected seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased in accordance with Section 301.8.3.
2. Where seats are without backrests, 20 seats between aisles shall be permitted with a minimum clear width of 12".

**301.8.2 Single access.** For rows of seating served by an aisle or doorway at only one end of the row, the minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.6 inch (15.2 mm) for every additional seat beyond seven seats, but the minimum clear width is not required to exceed 22 inches (559 mm). The path of egress travel, however, shall not exceed 30 feet (9144 mm) from any seat to a point where a person has a choice of two paths of egress travel to two exits. Where one of the two paths of travel is across the aisle through a row of seats to another aisle, there shall not be more than 24 seats between the two aisles; and the minimum clear width between rows for the row between the two aisles shall be 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row between aisles. *(Revised IBC 1008.8.2)*

**Exceptions:**

1. For smoke-protected seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased, shall comply with Section 301.8.3.
2. Where seats are without backrests, a maximum of 10 seats to an aisle shall be permitted with a minimum clear width of 12".
3. In smoke protected seating, the path of egress travel shall not exceed 50 feet (9144 mm) from any seat to a point where a person has a choice of two paths of egress travel to two exits. *(IBC 2001 Supp 1008.7 #2)*
4. In smoke protected seating, there shall not be more than 40 seats between the two aisles and the minimum clear width shall be 12 inches plus 0.3 inches for each additional seat. *(IBC 2001 Supp 1008.7.1)*

**301.8.3 Smoke protected aisle accessways.** The design of smoke protected aisle accessways shall comply with Table 301.8.3.

**TABLE 301.8.3  
SMOKE-PROTECTED AISLE ACCESSWAYS  
(IBC 1008.8)**

TOTAL NUMBER OF SEATS IN THE SMOKE PROTECTED ASSEMBLY OCCUPANCY	Maximum number of seats per row permitted to have a minimum 12-inch clear width aisle accessway	
	Aisle or doorway at both ends of row	Aisle or doorway at one end of row only
Less than 4,000	14	7
4,000	15	7
7,000	16	8
10,000	17	8
13,000	18	9
16,000	19	9
19,000	20	10
22,000 and greater	21	11

**301.9 Bleacher footboards and seatboards.** Bleacher footboards shall be provided above row one. Where the same platform is used for both seating and footrests, footrests are not required, provided each level or platform is not less than 24 inches (610 mm) wide. When projected on a horizontal plane, horizontal gaps shall not exceed 0.25 inch (6.4 mm) between footboards and seatboards. At aisles, horizontal gaps shall not exceed 0.25 inch (6.4 mm) between footboards. Where footboards are more than 30 inches (762 mm) above grade, openings between the seat and footboards shall not allow the passage of a sphere greater than 4 inches (102 mm) to the floor or ground below. ( *Revised IBC 1008.13*)

**301.9.1 Minimum width.** Seatboards shall be a minimum width of 9 inches.

**301.10 Guards required.** Guards shall be provided in the following areas:

1. Along open-sided walking surfaces, cross aisles, aisle stairs, ramps and landings of tiered seating areas which are located more than 30 inches (762 mm) above the floor or grade below. Such guards shall be not less than 42 inches (1067 mm) high, measured vertically above the leading edge of the tread, adjacent walking surface or adjacent bench seat. (*IBC 1003.2.12 & 1003.2.12.1*)

**Exception.** A guard is not required where the tiered seating is located adjacent to a wall and the space between the wall and the tiered seating is less than 4 inches.

2. Where an elevation change of 30 inches (762 mm) or less occurs between a cross aisle and the adjacent floor or grade below, guards not less than 26 inches (660 mm) above the aisle floor shall be provided. (*Revised IBC 1008.12.1*)

**Exception.** Where the backs of seats on the front of the cross aisle project 24 inches (610 mm) or more above the adjacent floor of the aisle, a guard need not be provided.

3. Unless subject to the requirements of Item 5, a guard with a minimum height of 26 inches (660 mm) shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and the guard would otherwise interfere with the sightlines of immediately adjacent seating. (*IBC 1008.12.2*)
4. A guard shall be provided for the full width of the aisle where the foot of the aisle is more than 30 inches (762 mm) above the floor or ground below. The guard shall be a minimum of 36 inches (914 mm) high and shall provide a minimum 42 inches (1067 mm) measured diagonally between the top of the rail and the nosing of the nearest aisle step. (*IBC 1008.12.3*)

**301.10.1 Opening limitations.** Open guards shall have balusters or ornamental patterns such that a 4-inch-diameter (102 mm) sphere cannot pass through any opening up to a height of 34 inches (864 mm). From a height of 34 inches (864 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, a sphere 8 inches (203 mm) in diameter shall not pass. (*Revised IBC 1003.2.12.2*)

**Exceptions:**

1. The triangular openings formed by the riser, tread and bottom rail at the open side of a aisle stair or tiered seating shall be of a maximum size such that a sphere of 6 inches (152 mm) in diameter cannot pass through the opening.
2. Guards at the end of aisles where they terminate at a fascia of boxes, balconies, and galleries shall have balusters or ornamental patterns such that a 4-inch-diameter (102 mm) sphere cannot pass through any opening up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, a sphere 8 inches (203 mm) in diameter shall not pass.
3. Guards shall be permitted to be constructed of chain link fence material with a maximum mesh size of 2.25 inch square.
4. The opening limitation shall not apply to guards required in accordance with Item 2 to Section 301.10.

**301.10.2 Guard design.** Guards and their attachment shall be designed to resist the loads indicated in Section 201. (*IBC 1003.2.12*)

**301.11 Handrails.** Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal, and aisle stairs, shall be provided with handrails located on each side. (*Revised 1003.3.3.11 & 1008.11*)

**Exceptions:**

1. Aisle stairs provided with a mid aisle handrail in accordance with Section 301.11.1 need not have additional handrails.
2. Aisle stairs serving seating only on one side are permitted to have a handrail on one side only.
3. Handrails are not required if, at the side of the aisle, there is a guard that complies with the graspability requirements of handrails.
4. Handrails are not required for ramped aisles having a gradient no greater than one unit vertical in eight units horizontal and seating on both sides.
5. Handrails are not required for an aisle stair serving a single row of seating.

**301.11.1 Mid-aisle handrails.** Where there is seating on both sides of the aisle, the mid aisle handrails shall be discontinuous with gaps or breaks at intervals not exceeding 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 at least 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the handrail shall have rounded terminations or bends. Such discontinuities shall also be permitted where there is seating on one side or both sides of the aisle, and where there are no guardrails complying with the graspability requirements for handrails. *(IBC 1008.11.1)*

**301.11.1.1 Additional handrails.** Where mid aisle handrails are provided, there shall be an additional handrail located approximately 12 inches (305 mm) below the main handrail. *(IBC 1008.11.2)*

**301.11.2 Height.** Handrail height, measured above aisle stair tread nosings, or finish surface of ramp slope, shall be uniform, not less than 34 inches (864 mm) and not more than 38 inches (965 mm). *(IBC 1003.3.3.11.1)*

**301.11.3 Handrail graspability.** Handrails with a circular cross section shall have an outside diameter of at least 1.25 inches (32 mm) and not greater than 2 inches (51 mm) or shall provide equivalent graspability. If the handrail is not circular, it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than 6.25 inches (159 mm) with a maximum cross-section dimension of 2.25 inches (57 mm). Edges shall have a minimum radius of 0.01 inch (3.2 mm). *(IBC 1003.3.3.11.3 Supp revised 0.125" radius to 0.01")*

**301.11.4 Continuity.** Handrail-gripping surfaces shall be continuous, without interruption by newel posts or other obstructions. *(IBC 1003.3.3.11.4)*

**Exceptions:**

1. Mid-aisle handrails in accordance with Section 301.11.1.
2. Handrail brackets or balusters attached to the bottom surface of the handrail that do not project horizontally beyond the sides of the handrail within 1.5 inches (38 mm) of the bottom of the handrail shall not be considered to be obstructions.

**301.11.5 Handrail termination.** Handrails located on the side of a aisle stair shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent aisle stair flight. *(Revised IBC 1003.3.3.11.5)*

**301.11.5.1 Mid-aisle handrail termination.** Mid aisle handrails shall not extend beyond the lowest riser and terminate within 30 inches, measured horizontally, from the face of the lowest riser. Handrail extensions are not required. *(Revised IBC 1008.11.3)*

**301.11.6 Clearance.** Clear space between a handrail and a wall or other surface shall be a minimum of 1.5 inches (38 mm). A handrail and a wall or other surface adjacent to the handrail shall be free of any sharp or abrasive elements. *(IBC 1003.3.3.11.6)*

**301.11.7 Projections.** Projections into the required width at each handrail shall not exceed 4.5 inches at or below the handrail height. *(IBC 1003.3.3.11.7)*

**301.11.8 Handrail design.** Handrails and their attachment shall be designed to resist the loads indicated in Section 201. *(IBC 1003.3.3.11)*

## Chapter 4

### Existing tiered seating

*(Staff reformatted to mirror Chapters 1 - 3)*

#### 401 Application and administration

**401.1 General.** Existing tiered seating shall comply with this chapter and the applicable provisions of Chapter 1.

**Exception:** Tiered seating where the top of footboards, seatboards, and aisles and cross aisles are not more than 30 inches above the floor or grade below, unless judged by the code official to represent a distinct hazard.

**401.2 Inspection** All existing tiered seating shall be inspected and evaluated at least once a year by a qualified person for compliance with the provisions of this chapter. All folding and telescopic seating shall be inspected to evaluate compliance with the manufactures installation and operational instructions, including an inspection during the opening and closing of such seating.

**401.3 Violations.** Where deficiencies are identified, the owner shall have until [date to be inserted by jurisdiction] to bring the tiered seating into compliance with the minimum prescribed standards, remove the tiered seating, or remove the tiered seating from use until the deficiencies are corrected and the tiered seating is certified compliant.

**401.4 Alterations and repairs.** Alterations or repairs to any tiered seating shall conform with the requirements of this standard for new construction. Portions of the structure not altered and not affected by the alteration are not required to comply with the requirements in this standard for a new structure.

#### 402 Construction

**402.1 Structural.** Existing tiered seating shall be maintained structurally sound as follows:

1. Components or fasteners shall not be broken, damaged, badly deteriorated or missing.
2. Adequate bearing shall be provided. The structure shall bear uniformly on the floor or ground in a manner so as to safely support the structure.
3. All components and systems shall be in proper working condition.

**402.2 Durability.** Materials used in the construction of exterior tiered seating shall be weather resistant. Where wood is used, it shall be naturally durable or preservative-treated wood as defined in the building code or other approved material. Where ferrous metal is used it shall be protected from corrosion. Fasteners shall consist of aluminum, copper, zinc, zinc-coated, or other approved corrosion-resistant coatings or materials.

**402.2.1 Interior corrosive environment.** Tiered seating located in interior corrosive environments, such as those located in conjunction with indoor pools, shall be protected from corrosion.  
*(By staff, as directed by committee)*

**402.3 Spaces beneath seats.** Spaces underneath seats shall be kept free from combustible and flammable materials. Spaces underneath seats shall not be occupied or utilized for purposes other than means of egress unless enclosed in one hour fire resistance rated construction.

**Exception.** Toilet rooms and ticket booths less than 100 square feet in area.

## 403 Egress

**403.1 Guards required.** Guards shall be provided for all elevated and non-elevated tiered seating in the following areas:

1. Along open-sided walking surfaces, cross aisles, aisle stairs, ramps and landings of tiered seating areas that are located more than 30 inches (762 mm) above the floor or grade below. Such guards shall be not less than 36 inches (1067 mm) high, measured vertically above the leading edge of the tread, adjacent walking surface or center of adjacent bench seat. (*IBC 1003.2.12 & 1003.2.12.1*)

### **Exceptions.**

1. Non elevated tiered seating units where the upper most seat is located less than or equal to 55-inches above the floor or ground below.
2. A guard is not required where the tiered seating is located adjacent to a wall and the space between the wall and the tiered seating is less than 4 inches.
2. Unless subject to the requirements of Item 3, a guard with a minimum height of 26 inches (660 mm) shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and the guard would otherwise interfere with the sightlines of immediately adjacent seating.
3. A guard shall be provided for the full width of the aisle where the foot of the aisle is more than 30 inches (762 mm) above the floor or ground below. The guard shall be a minimum of 36 inches (914 mm) high.

**403.1.1 Opening limitations.** Open guards shall have balusters or ornamental patterns such that a 4-inch-diameter (102 mm) sphere cannot pass through any opening.

### **Exceptions:**

1. The triangular openings formed by the riser, tread and bottom rail at the open side of a aisle stair shall be of a maximum size such that a sphere of 6 inches (152 mm) in diameter cannot pass through the opening.
2. Guards shall be permitted to be constructed of chain link fence material with a maximum mesh size of 2.25 inch square.

**403.1.2 Guard design.** Guards and their attachment shall be designed to resist the loads indicated in Section 201. (*IBC 1003.2.12*)

**403.2 Open spaces at footboards and seatboards.** Where an opening between the seatboard and footboard is located more than 30 inches above the floor or ground below, the opening shall be closed with construction such that a 4-inch diameter sphere cannot pass through.

**Exception:** Non elevated tiered seating units where the upper most seat is located less than or equal to 55 inches above the floor or ground below.