About This Document: This document is the Balloting Version of the First Draft of the proposed 2015 edition of NFPA 101. It has been compiled by NFPA staff for the purpose of balloting by the responsible Technical Committee(s) in accordance with the Regulations Governing the Development of NFPA Standards ("Regs."). This Balloting Version of the First Draft incorporates the changes made through First Revisions developed by the Technical Committee at its First Draft Meeting, and it is made available to Technical Committee members for their review during balloting. Only First Revisions that Pass the Technical Committee ballot will be included in the Final First Draft that will be published for public review. See, generally, Regs. at Section 4.3, Committee Activities: Input Stage.
Chapter 12  New Assembly Occupancies

12.1  General Requirements.
12.1.1  Application.
12.1.1.1  The requirements of this chapter shall apply to new buildings or portions thereof used as an assembly occupancy. (See 1.3.1.)

12.1.1.2  Administration. The provisions of Chapter 1, Administration, shall apply.
12.1.1.3  General. The provisions of Chapter 4, General, shall apply.

12.1.2* Classification of Occupancy. See 6.1.2.

12.1.3  Multiple Occupancies.
12.1.3.1 General. Multiple occupancies shall be in accordance with 6.1.14.

12.1.3.2 Atrium walls in accordance with 6.1.14.4.6 shall be permitted to serve as part of the separation required by 6.1.14.4.1 for creating separated occupancies on a story-by-story basis.

12.1.3.3 Simultaneous Occupancy. Exits shall be sufficient for simultaneous occupancy of both the assembly occupancy and other parts of the building, except where the authority having jurisdiction determines that the conditions are such that simultaneous occupancy will not occur.

12.1.3.3.1 The provisions of Chapter 12 shall apply to the assembly occupancy tenant space.

12.1.3.3.2 The provisions of 36.4.4 shall be permitted to be used outside the assembly occupancy tenant space.

12.1.4  Definitions.
12.1.4.1 General. For definitions, see Chapter 3, Definitions.

12.1.4.2* Special Definitions. The following is a list of special terms used in this chapter:

1. Aisle Accessway. See 3.3.11.
2. Aisle Stair. A stair within a seating area of an assembly occupancy that directly serves rows of seats to the side of the stair, including transition stairs that connect to an aisle or a landing.
3. Exhibit. See 3.3.77.
4. Exhibitor. See 3.3.78.
5. Exposition. See 3.3.84.
7. Festival Seating. See 3.3.237.1.
10. Gridiron. See 3.3.126.
11. Legitimate Stage. See 3.3.262.1.
12. Life Safety Evaluation. See 3.3.158.
14. Multipurpose Assembly Occupancy. See 3.3.188.2.1.
15. Pinrail. See 3.3.208.
17. Proscenium Wall. See 3.3.287.2.
18. Regular Stage. See 3.3.262.2.
19. Smoke-Protected Assembly Seating. See 3.3.237.4.
20. Special Amusement Building. See 3.3.36.10.
21. Stage. See 3.3.262.
Classification of Hazard of Contents. Contents of assembly occupancies shall be classified in accordance with the provisions of Section 6.2.

Minimum Construction Requirements. Assembly occupancies shall be limited to the building construction types specified in Table 12.1.6, based on the number of stories in height as defined in 4.6.3, unless otherwise permitted by the following (see 8.2.1):

1. This requirement shall not apply to outdoor grandstands of Type I or Type II construction.
2. This requirement shall not apply to outdoor grandstands of Type III, Type IV, or Type V construction that meet the requirements of 12.4.8.
3. This requirement shall not apply to grandstands of noncombustible construction supported by the floor in a building meeting the construction requirements of Table 12.1.6.
4. This requirement shall not apply to assembly occupancies within mall buildings in accordance with 36.4.4.

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Table 12.1.6 Construction Type Limitations
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X: Permitted for assembly of any occupant load.
X1: Permitted for assembly of any occupant load, but limited to one story below the level of exit discharge.
X2: Permitted for assembly limited to an occupant load of 1000 or less, and limited to one story below the level of exit discharge.
X3: Permitted for assembly limited to an occupant load of 1000 or less.
X4: Permitted for assembly limited to an occupant load of 300 or less.
NP: Not permitted.

*Protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 in the following locations:
1. Throughout the story of the assembly occupancy
2. Throughout all stories below the story of the assembly occupancy, including all stories below the level of exit discharge
3. In the case of an assembly occupancy located below the level of exit discharge, throughout all stories intervening between the story of the assembly occupancy and the level of exit discharge, including the level of exit discharge

b See 4.6.3.

cWhere every part of the structural framework of roofs in Type I or Type II construction is 20 ft (6100 mm) or more above the floor immediately below, omission of all fire protection of the structural members is permitted, including protection of trusses, roof framing, decking, and portions of columns above 20 ft (6100 mm).

dIn open-air fixed seating facilities, including stadia, omission of fire protection of structural members exposed to the outside atmosphere is permitted where substantiated by an approved engineering analysis.

eWhere seating treads and risers serve as floors, such seating treads and risers are permitted to be of 1-hour fire resistance-rated construction. Structural members supporting seating treads and risers are required to conform to the requirements of Table 12.1.6. Joints between seating tread and riser units are permitted to be unrated, provided that such joints do not involve separation from areas containing high hazard contents and the facility is constructed and operated in accordance with 12.4.2.

12.1.7 Occupant Load.

12.1.7.1* General. The occupant load, in number of persons for whom means of egress and other provisions are required, shall be determined on the basis of the occupant load factors of Table 7.3.1.2 that are characteristic of the use of the space or shall be determined as the maximum probable population of the space under consideration, whichever is greater.

12.1.7.1.1 In areas not in excess of 10,000 ft² (930 m²), the occupant load shall not exceed one person in 5 ft² (0.46 m²).

12.1.7.1.2 In areas in excess of 10,000 ft² (930 m²), the occupant load shall not exceed one person in 7 ft² (0.65 m²).

12.1.7.2 Waiting Spaces. In theaters and other assembly occupancies where persons are admitted to the building at times when seats are not available, or when the permitted occupant load has been reached based on 12.1.7.1 and persons are allowed to wait in a lobby or similar space until seats or space is available, all of the following requirements shall apply:
1. Such use of a lobby or similar space shall not encroach upon the required clear width of exits.
2. The waiting spaces shall be restricted to areas other than the required means of egress.
(3) Exits shall be provided for the waiting spaces on the basis of one person for each 3 ft² (0.28 m²) of waiting space area.

(4) Exits for waiting spaces shall be in addition to the exits specified for the main auditorium area and shall conform in construction and arrangement to the general rules for exits given in this chapter.

12.1.7.3 Life Safety Evaluation. Where the occupant load of an assembly occupancy exceeds 6000, a life safety evaluation shall be performed in accordance with 12.4.1.

12.1.7.4 Outdoor Facilities. In outdoor facilities, where approved by the authority having jurisdiction, the number of occupants who are each provided with not less than 15 ft² (1.4 m²) of lawn surface shall be permitted to be excluded from the maximum occupant load of 6000 of 12.1.7.3 in determining the need for a life safety evaluation.

12.2 Means of Egress Requirements.

12.2.1 General. All means of egress shall be in accordance with Chapter 7 and this chapter.

12.2.2 Means of Egress Components.

12.2.2.1 Components Permitted. Components of means of egress shall be limited to the types described in 12.2.2.2 through 12.2.2.12.

12.2.2.2 Doors.

12.2.2.2.1 Doors complying with 7.2.1 shall be permitted.

12.2.2.2.2 Assembly occupancies with occupant loads of 300 or less in malls (see 36.4.4.2.2) shall be permitted to have horizontal or vertical security grilles or doors complying with 7.2.1.4.1(3) on the main entrance/exits.

12.2.2.2.3 Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if the latch or lock is panic hardware or fire exit hardware complying with 7.2.1.7, unless otherwise permitted by one of the following:

   (1) This requirement shall not apply to delayed-egress locks as permitted in 12.2.2.5.

   (2) This requirement shall not apply to access-controlled egress doors as permitted in 12.2.2.6.

12.2.2.2.4 Locking devices complying with 7.2.1.5.5 shall be permitted to be used on a single door or a single pair of doors if both of the following conditions apply:

   (1) The door or pair of doors serve as the main exit and the assembly occupancy has an occupant load not greater than 500.

   (2) Any latching devices on such a door(s) from an assembly occupancy having an occupant load of 100 or more are released by panic hardware or fire exit hardware.

12.2.2.2.5 Delayed-egress locks complying with 7.2.1.6.1 shall be permitted on doors other than main entrance/exit doors.

12.2.2.2.6 Doors in the means of egress shall be permitted to be equipped with an approved access control system complying with 7.2.1.6.2, and such doors shall not be locked from the egress side when the assembly occupancy is occupied. (See 7.2.1.1.3.)

12.2.2.2.7 Elevator lobby exit access door locking in accordance with 7.2.1.6.3 shall be permitted.

12.2.2.2.8 Revolving doors complying with the requirements of 7.2.1.10 shall be permitted.

12.2.2.2.9 The provisions of 7.2.1.11.1.1 to permit turnstiles where revolving doors are permitted shall not apply.

12.2.2.2.10 No turnstiles or other devices that restrict the movement of persons shall be installed in any assembly occupancy in such a manner as to interfere with required means of egress facilities.

12.2.3 Stairs.

12.2.3.1 General. Stairs complying with 7.2.2 shall be permitted, unless one of the following criteria applies:

   (1) Stairs serving seating that is designed to be repositioned shall not be required to comply with 7.2.2.3.1.
(2) This requirement shall not apply to stages and platforms as permitted by 12.4.5.1.2.
(3) The stairs connecting only a stage or platform and the immediately adjacent assembly seating shall be permitted to have a handrail in the center only or on one side only.
(4) The stairs connecting only a stage or platform and the immediately adjacent assembly seating shall be permitted to omit the guards required by 7.1.8 where both of the following criteria are met:
   (a) The guard would restrict audience sight lines to the stage or platform.
   (b) The height between any part of the stair and the adjacent floor is not more than 42 in. (1065 mm).

12.2.2.3.2 Catwalk, Gallery, and Gridiron Stairs.
12.2.2.3.2.1 Noncombustible grated stair treads and landing floors shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.
12.2.2.3.2.2 Spiral stairs complying with 7.2.2.2.3 shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

12.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 7.2.3 shall be permitted.
12.2.2.5 Horizontal Exits. Horizontal exits complying with 7.2.4 shall be permitted.

12.2.2.6 Ramps. Ramps complying with 7.2.5 shall be permitted, and the following alternatives shall also apply:
   (1) Ramps not part of an accessible means of egress and serving only stages or nonpublic areas shall be permitted to have a slope not steeper than 1 in 8.
   (2) Ramped aisles not part of an accessible means of egress shall be permitted to have a slope not steeper than 1 in 8.

12.2.2.7 Exit Passageways. Exit passageways complying with 7.2.6 shall be permitted.
12.2.2.8 Reserved.
12.2.2.9 Reserved.
12.2.2.10 Fire Escape Ladders.
12.2.2.10.1 Fire escape ladders complying with 7.2.9 shall be permitted.
12.2.2.10.2 For ladders serving catwalks, the three-person limitation in 7.2.9.1(3) shall be permitted to be increased to ten persons.
12.2.2.11 Alternating Tread Devices. Alternating tread devices complying with 7.2.11 shall be permitted.
12.2.2.12 Areas of Refuge. Areas of refuge complying with 7.2.12 shall be permitted.

12.2.3 Capacity of Means of Egress.
12.2.3.1 General. The capacity of means of egress shall be in accordance with one of the following:
   (1) Section 7.3 for other than theater-type seating or smoke-protected assembly seating
   (2) 12.2.3.2 for rooms with theater-type seating or similar seating arranged in rows
   (3) 12.4.2 for smoke-protected assembly seating

12.2.3.2* Theater-Type Seating. Minimum clear widths of aisles and other means of egress serving theater-type seating, or similar seating arranged in rows, shall be in accordance with Table 12.2.3.2.

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Table 12.2.3.2 Capacity Factors
12.2.3.3 Width Modifications. The minimum clear widths shown in Table 12.2.3.2 shall be modified in accordance with all of the following:

1. If risers exceed 7 in. in height, the stair width in Table 12.2.3.2 shall be multiplied by factor \( A \), where \( A \) equals the following:

\[
A = 1 + \frac{\text{riser height} - 7}{5}
\]

2. If risers exceed 178 mm in height, the stair width in Table 12.2.3.2 shall be multiplied by factor \( A \), where \( A \) equals the following:

\[
A = 1 + \frac{\text{riser height} - 178}{125}
\]

3. Stairs not having a handrail within a 30 in. (760 mm) horizontal distance shall be 25 percent wider than otherwise calculated; that is, their width shall be multiplied by factor \( B \), where \( B \) equals the following:

\[
B = 1.25
\]

4. Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent; that is, their width shall be multiplied by factor \( C \), where \( C \) equals the following:

\[
C = 1.10
\]

12.2.3.4 Lighting and Access Catwalks. The requirements of 12.2.3.2 and 12.2.3.3 shall not apply to lighting and access catwalks as permitted by 12.4.5.9.

12.2.3.5 Reserved.

12.2.3.6 Main Entrance/Exit.

12.2.3.6.1 Every assembly occupancy shall be provided with a main entrance/exit.

12.2.3.6.2 The main entrance/exit width shall be as follows:

1. The main entrance/exit shall be of a width that accommodates two-thirds of the total occupant load in the following assembly occupancies:
   - Bars with live entertainment
   - Dance halls
   - Discotheques
   - Nightclubs
   - Assembly occupancies with festival seating

2. In assembly occupancies, other than those listed in 12.2.3.6.2(1), the main entrance/exit shall be of a width that accommodates one-half of the total occupant load.

12.2.3.6.3 The main entrance/exit shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street.

12.2.3.6.4 Access to the main entrance/exit shall be as follows:

1. Each level of the assembly occupancy shall have access to the main entrance/exit, and such access shall have the capacity to accommodate two-thirds of the occupant load of such levels in the following assembly occupancies:
   - Bars with live entertainment
   - Dance halls
   - Discotheques
   - Nightclubs
   - Assembly occupancies with festival seating

2. In assembly occupancies, other than those listed in 12.2.3.6.4(1), each level of the assembly occupancy shall have access to the main entrance/exit, and such access shall have the capacity to accommodate one-half of the occupant load of such levels.
12.2.3.6.5 Where the main entrance/exit from an assembly occupancy is through a lobby or foyer, the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit, regardless of whether all such exits serve as entrances to the building.

12.2.3.6.6* In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width needed to accommodate the permitted occupant load.

12.2.3.7 Other Exits. Each level of an assembly occupancy shall have access to the main entrance/exit and shall be provided with additional exits of a width to accommodate not less than one-half of the total occupant load served by that level.

12.2.3.7.1 Additional exits shall discharge in accordance with 12.2.7.

12.2.3.7.2 Additional exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable.

12.2.3.7.3 Additional exits shall be accessible from a cross aisle or a side aisle.

12.2.3.7.4 In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width required to accommodate the permitted occupant load.

12.2.3.8 Minimum Corridor Width. The width of any exit access corridor serving 50 or more persons shall be not less than 44 in. (1120 mm).

12.2.4* Number of Means of Egress.

12.2.4.1 The number of means of egress shall be in accordance with Section 7.4, other than exits for fenced outdoor assembly occupancies in accordance with 12.2.4.4.

12.2.4.2 Reserved.

12.2.4.3 Reserved.

12.2.4.4 A fenced outdoor assembly occupancy shall have not less than two remote means of egress from the enclosure in accordance with 7.5.1.3, unless otherwise required by one of the following:

(1) If more than 6000 persons are to be served by such means of egress, there shall be not less than three means of egress.

(2) If more than 9000 persons are to be served by such means of egress, there shall be not less than four means of egress.

12.2.4.5 Balconies or mezzanines having an occupant load not exceeding 50 shall be permitted to be served by a single means of egress, and such means of egress shall be permitted to lead to the floor below.

12.2.4.6 Balconies or mezzanines having an occupant load exceeding 50, but not exceeding 100, shall have not less than two remote means of egress, but both such means of egress shall be permitted to lead to the floor below.

12.2.4.7 Balconies or mezzanines having an occupant load exceeding 100 shall have means of egress as described in 7.4.1.

12.2.4.8 A second means of egress shall not be required from lighting and access catwalks, galleries, and gridirons where a means of escape to a floor or a roof is provided. Ladders, alternating tread devices, or spiral stairs shall be permitted in such means of escape.

12.2.5 Arrangement of Means of Egress.

12.2.5.1 General.

12.2.5.1.1 Means of egress shall be arranged in accordance with Section 7.5.
12.2.5.1.2 A common path of travel shall be permitted for the first 20 ft (6100 mm) from any point where the common path serves any number of occupants, and for the first 75 ft (23 m) from any point where the common path serves not more than 50 occupants.

12.2.5.1.3 Dead-end corridors shall not exceed 20 ft (6100 mm).

12.2.5.2 Access Through Hazardous Areas. Means of egress from a room or space for assembly purposes shall not be permitted through kitchens, storerooms, restrooms, closets, platforms, stages, projection rooms, or hazardous areas as described in 12.3.2.

12.2.5.3 Auditorium and Area Floors. Where the floor area of auditoriums and arenas is used for assembly occupancy activities/events, not less than 50 percent of the occupant load shall have means of egress provided without passing through adjacent fixed seating areas.

12.2.5.4 General Requirements for Access and Egress Routes Within Assembly Areas.

12.2.5.4.1 Festival seating, as defined in 3.3.237.1, shall be prohibited within a building, unless otherwise permitted by one of the following:

1. Festival seating shall be permitted in assembly occupancies having occupant loads of 250 or less.
2. Festival seating shall be permitted in assembly occupancies where occupant loads exceed 250, provided that an approved life safety evaluation has been performed. (See 12.4.1.)

12.2.5.4.2 Access and egress routes shall be maintained so that any individual is able to move without undue hindrance, on personal initiative and at any time, from an occupied position to the exits.

12.2.5.4.3 Access and egress routes shall be maintained so that crowd management, security, and emergency medical personnel are able to reach any individual at any time, without undue hindrance.

12.2.5.4.4 The width of aisle accessways and aisles shall provide sufficient egress capacity for the number of persons accommodated by the catchment area served by the aisle accessway or aisle in accordance with 12.2.3.2, or for smoke-protected assembly seating in accordance with 12.4.2.

12.2.5.4.5 Where aisle accessways or aisles converge to form a single path of egress travel, the required egress capacity of that path shall be not less than the combined required capacity of the converging aisle accessways and aisles.

12.2.5.4.6 Those portions of aisle accessways and aisles where egress is possible in either of two directions shall be uniform in required width, unless otherwise permitted by 12.2.5.4.7.

12.2.5.4.7 The requirement of 12.2.5.4.6 shall not apply to those portions of aisle accessways where the required width, not including the seat space described by 12.2.5.7.3, does not exceed 12 in. (305 mm).

12.2.5.4.8 In the case of side boundaries for aisle accessways or aisles, other than those for nonfixed seating at tables, the clear width shall be measured to boundary elements such as walls, guardrails, handrails, edges of seating, tables, and side edges of treads, and said measurement shall be made horizontally to the vertical projection of the elements, resulting in the smallest width measured perpendicularly to the line of travel.

12.2.5.5 Aisle Accessways Serving Seating Not at Tables.

12.2.5.5.1 The required clear width of aisle accessways between rows of seating shall be determined as follows:

1. Horizontal measurements shall be made, between vertical planes, from the back of one seat to the front of the most forward projection of the seat immediately behind it.
2. Where the entire row consists of automatic- or self-rising seats that comply with ASTM F 851, Standard Test Method for Self-Rising Seat Mechanisms, the measurement shall be permitted to be made with the seats in the up position.
12.2.5.5.2 The aisle accessway between rows of seating shall have a clear width of not less than 12 in. (305 mm), and this minimum shall be increased as a function of row length in accordance with 12.2.5.5.4, 12.2.5.5.5, and 12.2.5.5.6.

12.2.5.5.3 If used by not more than four persons, no minimum clear width shall be required for the portion of an aisle accessway having a length not exceeding 6 ft (1830 mm), measured from the center of the seat farthest from the aisle.

12.2.5.5.4 The increase in aisle accessway width required by 12.2.5.5.2 shall not apply to grandstands, bleachers, and folding and telescopic seating, provided that the number of seats between the farthest seat and an aisle does not exceed that shown in Table 12.4.8.2.5.

12.2.5.5.5* 12.2.5.5.4* Rows of seating served by aisles or doorways at both ends shall not exceed 100 seats per row.

12.2.5.5.5.1 12.2.5.5.4.1 The 12 in. (305 mm) minimum clear width of aisle accessway specified in 12.2.5.5.2 shall be increased by 0.3 in. (7.6 mm) for every seat over a total of 14 but shall not be required to exceed 22 in. (560 mm).

12.2.5.5.5.2 12.2.5.5.4.2 The requirement of 12.2.5.5.1 12.2.5.5.4.1 shall not apply to smoke-protected assembly seating as permitted by 12.4.2.7.

12.2.5.5.6 12.2.5.5.5 Rows of seating served by an aisle or doorway at one end only shall have a path of travel not exceeding 30 ft (9.1 m) in length from any seat to an aisle.

12.2.5.5.6.1 The 12 in. (305 mm) minimum clear width of aisle accessway specified in 12.2.5.5.2 shall be increased by 0.6 in. (15 mm) for every seat over a total of seven.

12.2.5.5.6.2 The requirements of 12.2.5.5.5 and 12.2.5.5.5.1 shall not apply to smoke-protected assembly seating as permitted by 12.4.2.8 and 12.4.2.9.

12.2.5.6 Rows of seating using tablet-arm chairs shall be permitted only if the clear width of aisle accessways complies with the requirements of 12.2.5.5 when measured under one of the following conditions:
(1) The clear width is measured with the tablet arm in the usable position.
(2) The clear width is measured with the tablet arm in the stored position where the tablet arm automatically returns to the stored position when raised manually to a vertical position in one motion and falls to the stored position by force of gravity.

12.2.5.7 The depth of seat boards shall be not less than 9 in. (230 mm) where the same level is not used for both seat boards and footboards.

12.2.5.8 Footboards, independent of seats, shall be provided so that there is no horizontal opening that allows the passage of a ½ in. (13 mm) diameter sphere.

12.2.5.6 Aisles Serving Seating Not at Tables.
12.2.5.6.1 General.
12.2.5.6.1.1 Aisles shall be provided so that the number of seats served by the nearest aisle is in accordance with 12.2.5.5.2 through 12.2.5.5.5, unless otherwise permitted by 12.2.5.6.1.2.

12.2.5.6.1.2 Aisles shall not be required in bleachers, provided that all of the following conditions are met:
(1) Egress from the front row shall not be obstructed by a rail, a guard, or other obstruction.
(2) The row spacing shall be 28 in. (710 mm) or less.
(3) The rise per row, including the first row, shall be 6 in. (150 mm) or less.
(4) The number of rows shall not exceed 16.
(5) The seat spaces shall not be physically defined.
(6) Seat boards that are also used as stepping surfaces for descent shall provide a walking surface with a width not less than 12 in. (305 mm), and, where a depressed footboard exists, the gap between seat boards of adjacent rows shall not exceed 12 in. (305 mm), measured horizontally.

(7) The leading edges of seat boards used as stepping surfaces shall be provided with a contrasting marking stripe so that the location of the leading edge is readily apparent, particularly where viewed in descent, and the following shall also apply:

(a) The marking stripe shall be not less than 1 in. (25 mm) wide and shall not exceed 2 in. (51 mm) in width.

(b) The marking stripe shall not be required where bleacher surfaces and environmental conditions, under all conditions of use, are such that the location of each leading edge is readily apparent, particularly when viewed in descent.

12.2.5.6.2 Dead-End Aisles. Dead-end aisles shall not exceed 20 ft (6100 mm) in length, unless otherwise permitted by one of the following:

(1) A dead-end aisle shall be permitted to exceed 20 ft (6100 mm) in length where seats served by the dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a clear width of not less than 12 in. (305 mm) plus 0.6 in. (15 mm) for each additional seat over a total of 7 in the row.

(2) A 16-row, dead-end aisle shall be permitted in folding and telescopic seating and grandstands.

(3) Aisle termination in accordance with 12.4.2.11 for smoke-protected assembly seating shall be permitted.

12.2.5.6.3* Minimum Aisle Width. The minimum clear width of aisles shall be sufficient to provide egress capacity in accordance with 12.2.3.1 but shall be not less than the following:

(1) 48 in. (1220 mm) for stairs having seating on each side, or 36 in. (915 mm) where the aisle does not serve more than 50 seats

(2) 36 in. (915 mm) for stairs having seating on only one side

(3) 23 in. (585 mm) between a handrail and seating, or between a guardrail and seating where the aisle is subdivided by a handrail

(4) 42 in. (1065 mm) for level or ramped aisles having seating on both sides, or 36 in. (915 mm) where the aisle does not serve more than 50 seats

(5) 36 in. (915 mm) for level or ramped aisles having seating on only one side

(6) 23 in. (585 mm) between a handrail or a guardrail and seating where the aisle does not serve more than five rows on one side

12.2.5.6.4 Aisle Stairs and Aisle Ramps.

12.2.5.6.4.1* The following shall apply to aisle stairs and aisle ramps:

(1) Aisles having a gradient steeper than 1 in 20, but not steeper than 1 in 8, shall consist of an aisle ramp.

(2) Aisles having a gradient steeper than 1 in 8 shall consist of an aisle stair.

12.2.5.6.4.2* Transitions in aisle stairs shall comply with the following:

(1) Aisle terminations shall not be required to exceed 14 in. (355 mm) in the direction of travel.

(2) Where a transition occurs between two aisle stairs with the same tread depth, the transition shall not be required to exceed 30 in. (760 mm) in the direction of travel.

(3) Where a transition occurs between an aisle stair to another aisle stair with deeper treads in a straight run in the descending direction, the transition shall not be required to exceed 22 in. (560 mm) in the direction of travel.
(4) Where a transition occurs between an aisle stair to another aisle stair with narrower treads in a straight run in the descending direction, the transition shall not be required to exceed 30 in. (760 mm) in the direction of travel.
(5) Steps in aisle transitions around a vomitory shall be permitted.
(6) The leading edge of treads adjacent to transitions shall be indicated by a distinctive marking stripe.
(b) The construction-caused nonuniformities shall not exceed $\frac{3}{8}$ in. (10 mm) where the aisle tread depth is less than 22 in. (560 mm).
(c) The construction-caused nonuniformities shall not exceed $\frac{3}{4}$ in. (19 mm) where the aisle tread depth is 22 in. (560 mm) or greater.
(d) Where nonuniformities exceed $\frac{3}{16}$ in. (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated by a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers.

12.2.5.6.7 Aisle Stair Profile. Aisle stairs shall comply with all of the following:

(1) Aisle risers shall be vertical or sloped under the tread projection at an angle not to exceed 30 degrees from vertical.
(2) Tread projection not exceeding 1½ in. (38 mm) shall be permitted.
(3) Tread projection shall be uniform in each aisle, except as otherwise permitted by 12.2.5.6.7(4).
(4) Construction-caused projection nonuniformities not exceeding $\frac{1}{4}$ in. (6.4 mm) shall be permitted.

12.2.5.6.8* Aisle Handrails.

12.2.5.6.8.1 Aisle transition stairs shall comply with the following:

(1) Aisle transition stairs without seating at either side shall be provided with a handrail on both sides of the aisle.
(2) Where an aisle stair leading to the aisle transition stair includes a center handrail, a center handrail shall also be provided on the aisle transition stair.

12.2.5.6.8.2 Ramped aisles having a gradient exceeding 1 in 20 and aisle stairs shall be provided with handrails at one side or along the centerline and shall also be in accordance with 7.2.2.4.4.1, 7.2.2.4.4.5, and 7.2.2.4.4.6.

12.2.5.6.8.3 Where seating exists on both sides of the aisle, the handrails shall be noncontinuous with gaps or breaks at intervals not exceeding five rows to facilitate access to seating and to allow crossing from one side of the aisle to the other.

12.2.5.6.8.4 Where handrails are provided in the middle of aisle stairs, an additional intermediate rail shall be located approximately 12 in. (305 mm) below the main handrail.

12.2.5.6.8.5 Handrails shall not be required where otherwise permitted by one of the following:

(1) Handrails shall not be required for ramped aisles having a gradient not steeper than 1 in 8 and having seating on both sides where the aisle does not serve as an accessible route.
(2) The requirement for a handrail shall be satisfied by the use of a guard provided with a rail that complies with the graspability requirements for handrails and is located at a consistent height between 34 in. and 42 in. (865 mm and 1065 mm), measured as follows:

(a) Vertically from the top of the rail to the leading edge (nosing) of stair treads
(b) Vertically from the top of the rail to the adjacent walking surface in the case of a ramp

12.2.5.6.9* Aisle Marking.

12.2.5.6.9.1 A contrasting marking stripe shall be provided on each tread at the nosing or leading edge so that the location of such tread is readily apparent, particularly when viewed in descent.

12.2.5.6.9.2 The marking stripe shall be not less than 1 in. (25 mm) wide and shall not exceed 2 in. (51 mm) in width.
12.2.5.6.9.3  The marking stripe shall not be required where tread surfaces and environmental conditions, under all conditions of use, are such that the location of each tread is readily apparent, particularly when viewed in descent.

12.2.5.7* Aisle Accessways Serving Seating at Tables.
12.2.5.7.1  The required clear width of an aisle accessway shall be not less than 12 in. (305 mm) where measured in accordance with 12.2.5.7.3 and shall be increased as a function of length in accordance with 12.2.5.7.4, unless otherwise permitted by 12.2.5.7.2.

12.2.5.7.2* If used by not more than four persons, no minimum clear width shall be required for the portion of an aisle accessway having a length not exceeding 6 ft (1830 mm) and located farthest from an aisle.

12.2.5.7.3* Where nonfixed seating is located between a table and an aisle accessway or aisle, the measurement of required clear width of the aisle accessway or aisle shall be made to a line 19 in. (485 mm), measured perpendicularly to the edge of the table, away from the edge of said table.

12.2.5.7.4* The minimum required clear width of an aisle accessway, measured in accordance with 12.2.5.4.8 and 12.2.5.7.3, shall be increased beyond the 12 in. (305 mm) requirement of 12.2.5.7.1 by ½ in. (13 mm) for each additional 12 in. (305 mm) or fraction thereof beyond 12 ft (3660 mm) of aisle accessway length, where measured from the center of the seat farthest from an aisle.

12.2.5.7.5  The path of travel along the aisle accessway shall not exceed 36 ft (11 m) from any seat to the closest aisle or egress doorway.

12.2.5.8  Aisles Serving Seating at Tables.
12.2.5.8.1* Aisles that contain steps or that are ramped, such as aisles serving dinner theater–style configurations, shall comply with the requirements of 12.2.5.6.

12.2.5.8.2* The width of aisles serving seating at tables shall be not less than 44 in. (1120 mm) where serving an occupant load exceeding 50, and 36 in. (915 mm) where serving an occupant load of 50 or fewer.

12.2.5.8.3* Where nonfixed seating is located between a table and an aisle, the measurement of required clear width of the aisle shall be made to a line 19 in. (485 mm), measured perpendicularly to the edge of the table, away from the edge of said table.

12.2.5.9  Approval of Layouts.
12.2.5.9.1  Where required by the authority having jurisdiction, plans drawn to scale showing the arrangement of furnishings or equipment shall be submitted to the authority by the building owner, manager, or authorized agent to substantiate conformance with the provisions of 12.2.5.

12.2.5.9.2  The layout plans shall constitute the only acceptable arrangement, unless one of the following criteria is met:
(1)  The plans are revised.
(2)  Additional plans are submitted and approved.
(3)  Temporary deviations from the specifications of the approved plans are used, provided that the occupant load is not increased and the intent of 12.2.5.9 is maintained.

12.2.6  Travel Distance to Exits.
12.2.6.1  Travel distance shall be measured in accordance with Section 7.6.

12.2.6.2  Exits shall be arranged so that the total length of travel from any point to reach an exit shall not exceed 200 ft (61 m) in any assembly occupancy, unless otherwise permitted by one of the following:
(1)  The travel distance shall not exceed 250 ft (76 m) in assembly occupancies protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
(2)  The travel distance requirement shall not apply to smoke-protected assembly seating as permitted by 12.4.2.12, 12.4.2.13, and 12.4.2.14.

12.2.7  Discharge from Exits.
12.2.7.1 Exit discharge shall comply with Section 7.7.
12.2.7.2 The level of exit discharge shall be measured at the point of principal entrance to the building.
12.2.7.3 Where the principal entrance to an assembly occupancy is via a terrace, either raised or depressed, such terrace shall be permitted to be considered to be the first story in height for the purposes of Table 12.1.6 where all of the following criteria are met:
   (1) The terrace is at least as long, measured parallel to the building, as the total width of the exit(s) it serves but not less than 60 in. (1525 mm) long.
   (2) The terrace is at least as wide, measured perpendicularly to the building, as the exit(s) it serves but not less than 10 ft (3050 mm) wide.
   (3) Required stairs leading from the terrace to the finished ground level are protected in accordance with 7.2.2.6.3 or are not less than 10 ft (3050 mm) from the building.

12.2.8 Illumination of Means of Egress. Means of egress, other than for private party tents not exceeding 1200 ft² (112 m²), shall be illuminated in accordance with Section 7.8.

12.2.9 Emergency Lighting.
12.2.9.1 Emergency lighting shall be provided in accordance with Section 7.9.
12.2.9.2 Private party tents not exceeding 1200 ft² (112 m²) shall not be required to have emergency lighting.

12.2.10 Marking of Means of Egress.
12.2.10.1 Means of egress shall be provided with signs in accordance with Section 7.10.
12.2.10.2 Exit markings shall not be required on the seating side of vomitories from seating areas where exit marking is provided in the concourse and where such marking is readily apparent from the vomitories.
12.2.10.3 Evacuation diagrams in accordance with 7.10.8.5 shall be provided.

12.2.11 Special Means of Egress Features.
12.2.11.1 Guards and Railings.
12.2.11.1.1* Sight Line–Constrained Rail Heights. Unless subject to the requirements of 12.2.11.1.2, a fasciae or railing system complying with the guard requirements of 7.2.2.4, and having a height of not less than 26 in. (660 mm), shall be provided where the floor or footboard elevation is more than 30 in. (760 mm) above the floor or the finished ground level below, and where the fasciae or railing system would otherwise interfere with the sight lines of immediately adjacent seating.
12.2.11.1.2 At Foot of Aisles.
   12.2.11.1.2.1 A fasciae or railing system complying with the guard requirements of 7.2.2.4 shall be provided for the full width of the aisle where the foot of the aisle is more than 30 in. (760 mm) above the floor or the finished ground level below.
   12.2.11.1.2.2 The fasciae or railing shall be not less than 36 in. (915 mm) high and shall provide not less than 42 in. (1065 mm), measured diagonally, between the top of the rail and the nosing of the nearest tread.
12.2.11.1.3 At Cross Aisles. Guards and railings at cross aisles shall meet the following criteria:
   (1) Cross aisles located behind seating rows shall be provided with railings not less than 26 in. (660 mm) above the adjacent floor of the aisle.
   (2) The requirement of 12.2.11.1.3(1) shall not apply where the backs of seats located at the front of the aisle project 24 in. (610 mm) or more above the adjacent floor of the aisle.
   (3) Where cross aisles exceed 30 in. (760 mm) above the floor or the finished ground level below, guards shall be provided in accordance with 7.2.2.4.

12.2.11.1.4 At Side and Back of Seating Areas. Guards complying with the guard requirements of 7.2.2.4 shall be provided with a height not less than 42 in. (1065 mm) above the aisle, aisle
accessway, or footboard where the floor elevation exceeds 30 in. (760 mm) above the floor or the finished ground level to the side or back of seating.

12.2.11.1.5 **Below Seating.** Openings between footboards and seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

12.2.11.1.6 **Locations Not Requiring Guards.**

12.2.11.1.6.1 Guards shall not be required in the following locations:

1. Guards shall not be required on the audience side of stages, of raised platforms, and of other raised floor areas such as runways, ramps, and side stages used for entertainment or presentations.
2. Permanent guards shall not be required at vertical openings in the performance area of stages.
3. Guards shall not be required where the side of an elevated walking surface is required to be open for the normal functioning of special lighting or for access and use of other special equipment.

12.2.11.1.6.2* Where a guard is ordinarily required but not provided in accordance with 12.2.11.1.6 (1) or (2), a written plan shall be developed and maintained to mitigate the fall hazards of unguarded raised floor areas and vertical openings on stages.

12.2.11.2 **Lockups.** Lockups in assembly occupancies shall comply with the requirements of 22.4.5.

12.3 **Protection.**

12.3.1 **Protection of Vertical Openings.** Any vertical opening shall be enclosed or protected in accordance with Section 8.6, unless otherwise permitted by one of the following:

1. Stairs or ramps shall be permitted to be unenclosed between balconies or mezzanines and main assembly areas located below, provided that the balcony or mezzanine is open to the main assembly area.
2. Exit access stairs from lighting and access catwalks, galleries, and gridirons shall not be required to be enclosed.
3. Assembly occupancies protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 shall be permitted to have unprotected vertical openings between any two adjacent floors, provided that such openings are separated from unprotected vertical openings serving other floors by a barrier complying with 8.6.5.
4. Assembly occupancies protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 shall be permitted to have convenience stair openings in accordance with 8.6.9.2.

12.3.2 **Protection from Hazards.**

12.3.2.1 **Service Equipment, Hazardous Operations or Processes, and Storage Facilities.**

12.3.2.1.1 Rooms containing high-pressure boilers, refrigerating machinery of other than the domestic refrigerator type, large transformers, or other service equipment subject to explosion shall meet both of the following requirements:

1. Such rooms shall not be located directly under or abutting required exits.
2. Such rooms shall be separated from other parts of the building by fire barriers in accordance with Section 8.3 having a minimum 1-hour fire resistance rating or shall be protected by automatic extinguishing systems in accordance with Section 8.7.

12.3.2.1.2 Rooms or spaces for the storage, processing, or use of materials specified in 12.3.2.1.2(1) through (3) shall be protected in accordance with one of the following:

1. Separation from the remainder of the building by fire barriers having a minimum 1-hour fire resistance rating or protection of such rooms by automatic extinguishing systems as specified in Section 8.7 in the following areas:
   a. Boiler and furnace rooms, unless otherwise permitted by one of the following:
i. The requirement of 12.3.2.1.2(1)(a) shall not apply to rooms enclosing furnaces, heating and air-handling equipment, or compressor equipment with a total aggregate input rating less than 200,000 Btu (211 MJ), provided that such rooms are not used for storage.

ii. The requirement of 12.3.2.1.2(1)(a) shall not apply to attic locations of the rooms addressed in 12.3.2.1.2(1)(a)(i), provided that such rooms comply with the draftstopping requirements of 8.6.11.(b)

Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction

(c) Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards

(2) Separation from the remainder of the building by fire barriers having a minimum 1-hour fire resistance rating and protection of such rooms by automatic extinguishing systems as specified in Section 8.7 in the following areas:

(a) Laundries
(b) Maintenance shops, including woodworking and painting areas
(c) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the authority having jurisdiction
(d) Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards
(3) Protection as permitted in accordance with 9.7.1.2 where automatic extinguishing is used to meet the requirements of 12.3.2.1.2(1) or (2)

12.3.2.2 Cooking Equipment. Cooking equipment shall be protected in accordance with 9.2.3, unless the cooking equipment is one of the following types:

(1) Outdoor equipment
(2) Portable equipment not flue-connected
(3) Equipment used only for food warming

12.3.3 Interior Finish.

12.3.3.1 General. Interior finish shall be in accordance with Section 10.2.

12.3.3.2 Corridors, Lobbies, and Enclosed Stairways. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A or Class B in all corridors and lobbies and shall be Class A in enclosed stairways.

12.3.3.3 Assembly Areas. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A or Class B in general assembly areas having occupant loads of more than 300 and shall be Class A, Class B, or Class C in assembly areas having occupant loads of 300 or fewer.

12.3.3.4 Screens. Screens on which pictures are projected shall comply with requirements of Class A or Class B interior finish in accordance with Section 10.2.

12.3.5 Interior Floor Finish.

12.3.5.1 Interior floor finish shall comply with Section 10.2.

12.3.5.2 Interior floor finish in exit enclosures and exit access corridors and in spaces not separated from them by walls complying with 12.3.6 shall be not less than Class II.

12.3.5.3 Interior floor finish shall comply with 10.2.7.1 or 10.2.7.2, as applicable.

12.3.4 Detection, Alarm, and Communications Systems.

12.3.4.1 General.
12.3.4.1.1 Assembly occupancies with occupant loads of more than 300 and all theaters with more than one audience-viewing room shall be provided with an approved fire alarm system in accordance with 9.6.1 and 12.3.4, unless otherwise permitted by 12.3.4.1.2.

12.3.4.1.2 Assembly occupancies that are a part of a multiple occupancy protected as a mixed occupancy (see 6.1.14) shall be permitted to be served by a common fire alarm system, provided that the individual requirements of each occupancy are met.

12.3.4.2 Initiation.

12.3.4.2.1 Initiation of the required fire alarm system shall be by both of the following means:
(1) Manual means in accordance with 9.6.2.1(1), unless otherwise permitted by one of the following:
(a) The requirement of 12.3.4.2.1(1) shall not apply where initiation is by means of an approved automatic fire detection system in accordance with 9.6.2.1(2) that provides fire detection throughout the building.
(b) The requirement of 12.3.4.2.1(1) shall not apply where initiation is by means of an approved automatic sprinkler system in accordance with 9.6.2.1(3) that provides fire detection and protection throughout the building.
(2) Where automatic sprinklers are provided, initiation of the fire alarm system by sprinkler system waterflow, even where manual fire alarm boxes are provided in accordance with 12.3.4.2.1(1)

12.3.4.2.2 The initiating device shall be capable of transmitting an alarm to a receiving station, located within the building, that is constantly attended when the assembly occupancy is occupied.

12.3.4.2.3* In assembly occupancies with occupant loads of more than 300, automatic detection shall be provided in all hazardous areas that are not normally occupied, unless such areas are protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.

12.3.4.3 Notification. The required fire alarm system shall activate an audible and visible alarm in a constantly attended receiving station within the building when occupied for purposes of initiating emergency action.

12.3.4.3.1 Positive alarm sequence in accordance with 9.6.3.4 shall be permitted.

12.3.4.3.2 Reserved.

12.3.4.3.3 Occupant notification shall be by means of voice announcements in accordance with 9.6.3.9, initiated by the person in the constantly attended receiving station.

12.3.4.3.4 Occupant notification shall be by means of visible signals in accordance with 9.6.3.5, initiated by the person in the constantly attended receiving station, unless otherwise permitted by 12.3.4.3.5.

12.3.4.3.5* Visible signals shall not be required in the assembly seating area, or the floor area used for the contest, performance, or entertainment, where the occupant load exceeds 1000 and an approved, alternative visible means of occupant notification is provided. (See 9.6.3.5.7.)

12.3.4.3.6 The announcement shall be permitted to be made via a voice communication or public address system in accordance with 9.6.3.9.2.

12.3.4.3.7 Where the authority having jurisdiction determines that a constantly attended receiving station is impractical, both of the following shall be provided:
(1) Automatically transmitted evacuation or relocation instructions shall be provided in accordance with NFPA 72, National Fire Alarm and Signaling Code.
(2) The system shall be monitored by a supervising station in accordance with NFPA 72.

12.3.5 Extinguishment Requirements.

12.3.5.1 The following assembly occupancies shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1):
(1) Dance halls
(2) Discotheques
Nightclubs
Assembly occupancies with festival seating

12.3.5.2 Any building containing one or more assembly occupancies where the aggregate occupant load of the assembly occupancies exceeds 300 shall be protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 as follows (see also 12.1.6, 12.2.6, 12.3.2, and 12.3.6):

1. Throughout the story containing the assembly occupancy
2. Throughout all stories below the story containing the assembly occupancy
3. In the case of an assembly occupancy located below the level of exit discharge, throughout all stories intervening between that story and the level of exit discharge, including the level of exit discharge

12.3.5.3 The requirements of 12.3.5.2 shall not apply to the following:

1. Assembly occupancies consisting of a single multipurpose room of less than 12,000 ft² (1115 m²) that are not used for exhibition or display and are not part of a mixed occupancy
2. Gymnasiums, skating rinks, and swimming pools used exclusively for participant sports with no audience facilities for more than 300 persons
3. Locations in stadia and arenas as follows:
   a. Over the floor areas used for contest, performance, or entertainment, provided that the roof construction is more than 50 ft (15 m) above the floor level, and use is restricted to low fire hazard uses
   b. Over the seating areas, provided that use is restricted to low fire hazard uses
   c. Over open-air concourses where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading
4. Locations in unenclosed stadia and arenas as follows:
   a. Press boxes of less than 1000 ft² (93 m²)
   b. Storage facilities of less than 1000 ft² (93 m²) if enclosed with not less than 1-hour fire resistance-rated construction
   c. Enclosed areas underneath grandstands that comply with 12.4.8.5

12.3.5.4 Where another provision of this chapter requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with 9.7.1.1(1).

12.3.6 Corridors. Interior corridors and lobbies shall be constructed in accordance with 7.1.3.1 and Section 8.3, unless otherwise permitted by one of the following:

1. Corridor and lobby protection shall not be required where assembly rooms served by the corridor or lobby have at least 50 percent of their exit capacity discharging directly to the outside, independent of corridors and lobbies.
2. Corridor and lobby protection shall not be required in buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
3. Lobbies serving only one assembly area that meet the requirements for intervening rooms (see 7.5.1.6) shall not be required to have a fire resistance rating.
4. Where the corridor ceiling is an assembly having a 1-hour fire resistance rating where tested as a wall, the corridor walls shall be permitted to terminate at the corridor ceiling.
5. Corridor and lobby protection shall not be required in buildings protected throughout by an approved, total (complete) coverage smoke detection system providing occupant notification and installed in accordance with Section 9.6.

12.4 Special Provisions.
12.4.1 Life Safety Evaluation.

12.4.1.1* General. Where a life safety evaluation is required by other provisions of the Code, it shall comply with the following:

1. The life safety evaluation shall be performed by persons acceptable to the authority having jurisdiction.

2. The life safety evaluation shall include a written assessment of safety measures for conditions listed in 12.4.1.2 and of the building systems and facility management in accordance with 12.4.1.3.

3. The life safety evaluation shall be approved annually by the authority having jurisdiction and shall be updated for special or unusual conditions in accordance with the provisions of 13.4.1 for existing assembly occupancies.

12.4.1.2 Conditions to Be Assessed. Life safety evaluations shall include an assessment of all of the following conditions and related appropriate safety measures:

1. Nature of the events and the participants and attendees
2. Access and egress movement, including crowd density problems
3. Medical emergencies
4. Fire hazards
5. Permanent and temporary structural systems
6. Severe weather conditions
7. Earthquakes
8. Civil or other disturbances
9. Hazardous materials incidents within and near the facility
10. Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility

12.4.1.3* Building Systems and Facility Management Assessments. Life safety evaluations shall include assessments of both building systems and facility management features upon which reliance is placed for the safety of facility occupants, and such assessments shall consider scenarios appropriate to the facility.

12.4.1.3.1 Building Systems. Prior to issuance of the building permit, the design team shall provide the authority having jurisdiction with building systems documentation in accordance with 12.4.1.4.

12.4.1.3.2 Facility Management. Prior to issuance of the certificate of occupancy, the facility management shall provide the authority having jurisdiction with facility management documentation in accordance with 12.4.1.5.

12.4.1.3.3 Life Safety Evaluation.

12.4.1.3.3.1 Prior to issuance of the building permit, the persons performing the life safety evaluation shall confirm that the building systems provide safety measures.

12.4.1.3.3.2 Prior to issuance of the certificate of occupancy, the persons performing the life safety evaluation shall confirm that the facility management and operational plans provide appropriate safety measures.

12.4.1.3.3.3 The authority having jurisdiction shall determine the acceptable persons performing the life safety evaluation in a timely manner to enable the design team and facility management to resolve concerns to the satisfaction of the persons performing the life safety evaluation prior to their submission.

12.4.1.4 Life Safety Building Systems Document. The authority having jurisdiction shall be provided with a life safety building systems document providing the information required in 12.4.1.4.2 through 12.4.1.4.4.
12.4.1.4.1 Document Distribution. The persons performing the life safety evaluation, the authority having jurisdiction (AHJ), the A/E design team, and the building owner shall receive a copy of the life safety building systems document prior to issuance of the building permit.

12.4.1.4.2 Life Safety Narrative. A life safety narrative shall be provided describing the following:

(1) Building occupancy, construction type, and intended uses and events
(2) Building area and population capacity of the proposed facility
(3) Principal fire and life safety features/strategies for the building, including the following:
   (a) Sprinkler protection
   (b) Smoke control/protection
   (c) Fire alarm — visual and audible
   (d) PA system
   (e) Emergency power and lighting
   (f) Provisions for patrons with disabilities
   (g) Fire department access
   (h) Fire/Emergency command center
(4) Exterior construction design parameters used/applied

12.4.1.4.3 Life Safety Floor Plans. Life safety floor plans of each level shall be provided with the following:

(1) Occupant load, exit location, exit capacity, main exit/entry, horizontal exits, travel distance, and exit discharge
(2) Fire and smoke barriers
(3) Areas of smoke-protected assembly occupancy
(4) Separate smoke-protected areas or zones - if applicable
(5) Areas of other occupancy type and separations, if required
(6) Unprotected vertical openings, such as including atriums, communicating spaces, and convenience openings
(7) Event plans for each anticipated type of event depicting the following:
   (a) Seating configuration
   (b) Exhibit booth layout
   (c) Stage location
   (d) Occupant load, exit capacity required, exits provided, and travel distance
   (e) Any floor or stage use restrictions
   (f) Plan and/or section drawing indicating areas where the roof construction is more than 50 feet and limits of sprinkler protection.
   (g) Areas of refuge — interior and exterior

12.4.1.4.4 Engineering Analysis and Calculations. An engineering analysis and calculations shall be provided with the following:

(1) Smoke protection calculations as follows:
   (a) NFPA 92, Standard for Smoke Control Systems, to derive smoke exhaust and fresh air requirements per NFPA 92, Standard for Smoke Control Systems
   (b) Smoke maintained at a level six-feet above the floor of the means of egress
   (c) Proposed testing protocol for smoke system and pass/fail criteria
   (d) Calculations for performance-based design methods accepted by the AHJ
   (e) Smoke and fire modeling
   (f) Timed egress analysis
   (g) Assumed flow rates and travel speed
(2) Sprinkler protection calculations, including an engineering analysis substantiating locations in accordance with 12.3.5.3 where sprinkler protection would be ineffective due to height and combustible loading.

(3) Load diagram of rigging/load capacity of gridiron, fly loft, or long-span roof structure used for hanging overhead objects.

12.4.1.5 Life Safety Management Document. The authority having jurisdiction (AHJ) shall be provided with a life safety management document providing the information required in 12.4.1.5.2 through 12.4.1.5.7.

12.4.1.5.1 Document Distribution. The persons performing the life safety evaluation, the authority having jurisdiction (AHJ), the A/E design team, and the building owner shall receive a copy of the life safety management document prior to issuance of the certificate of occupancy.

12.4.1.5.2 Facility Management and Operational Plans. Facility management and operational plans shall address the following:

1. Best practices adopted or recognized
2. Emergency plans
3. Evacuation plans
4. Shelter-in-place plans, including capacities and protection considerations
5. Crowd management training plan

6. Safety plans, which include the following:
   a. Training plans
   b. Safety equipment plans
7. Fire alarm, smoke system protocol, and testing plans
8. First aid or medical treatment plans, which include the following:
   a. Defined levels of service
   b. Standing orders adopted
   c. Supply and equipment plan
9. Housing-keeping plans — biological, medical, hazardous materials cleaning
10. Emergency communication plans, which include the following:
    a. Chain of authority and incident command system employed
    b. Contact information for:
       i. Venue personnel
       ii. Emergency management and response organizations (e.g., fire, police, medical, utility, transportation, key stakeholders)
    c. Communication systems
    d. Standard announcement for incidents or emergency situations
11. Risk and threat assessment for venue and surrounding area for the following:
    a. Severe weather
    b. Hazardous materials
    c. Terrorism
12. Operating procedures and protocols for risks, such as the following:
    a. Severe weather preparedness and monitoring plans
    b. Hazardous materials incidence response plans
    c. Terrorism response plans
13. First responder response/arrival routes plans
14. Alcohol management plans
15. Food safety plans
16. Rigging and temporary performance structure, which includes the following:
   a. Design and safety review plans
(b) Emergency action plans
(17) Chemical and hazardous materials information and data
(18) Barrier and wall protection plans for motor sports or similar events

12.4.1.5.3 Records. Records of the facility management plans, including procedures and location, shall be maintained for the following:

(1) Crowd management training
(2) Safety training
(3) Fire alarm, smoke system maintenance, and test records
(4) First aid or medical treatment and regulation compliance

12.4.1.5.4 Building Systems Reference Guide. A building systems reference guide shall be provided in accordance with 12.4.1.5.4.1 through 12.4.1.5.4.3.

12.4.1.5.4.1 A basic life safety building systems reference guide shall be developed and maintained.

12.4.1.5.4.2 The life safety building systems reference guide shall contain the important and key information for the venue management’s use when planning events/activities for the safety of patrons, performers/participants, employees, and vendors.

12.4.1.5.4.3 The life safety building systems document in accordance with 12.4.1.4 shall be permitted to be used, but the life safety building systems reference guide shall include the following:

(1) Occupant capacity of every space/room
(2) Egress flow diagrams, including assumed flow rates, and capacities of all aisles and hallways, including public and nonpublic areas
(3) Capacities of all exterior doors and/or choke points in immediate perimeter areas
(4) Limitations or assumptions for ingress control that could be in place during an emergency egress/evacuation, including control gates, queuing barriers, and turnstiles
(5) Capacities of immediate perimeter exterior walkways, including assumed flow rates for exterior areas
(6) Assumed egress paths for normal conditions — transportation modes
(7) Management level (lay) sequencing charts for alarm and emergency communication systems, the manual, or override options/instructions that include the following:
   (a) List of codes or alarm signals
   (b) Location of manual overrides
   (c) Description of what exactly happens during an alarm, such as exhaust fans or doors open
(8) Principle fire and life safety features/strategies, such as sprinklers, smoke control, fire alarm notifications, PA system, fire department access
(9) Assumptions when developing occupancy plans for venue floor, open areas, and nonevent spaces, such as the following:
   (a) Event floor plans/setup diagrams for each typical type event/activity
   (b) Fire sprinkler and smoke protection capabilities
(10) Severe weather shelter areas, locations, structure considerations (limitations), capacities (occupancy and density factor)
(11) Command center, which includes the following:
   (a) Location (formal or informal)
   (b) Structural integrity considerations
   (c) Redundant locations and/or capabilities
   (d) Jurisdictional rights — assumed and/or applied
(12) Locations and capacities of wheelchair and mobility-impaired seating
(13) Locations and capacities of “Safe Haven” areas
(14) Rigging or structural load capacities of grids, truss structure, fly lofts, ceilings, floors, ramps, staging, etc.
(15) List of locations of emergency equipment (i.e., fire extinguishers, fire hose cabinets, fire hydrants, AED’s, etc.)
(16) Sequencing of electrical service, such as the following:
(a) Emergency generators and charts of all areas illuminated during power outages
(b) Multiple electrical feed capabilities
(17) List of mechanical, moveable equipment in the facility
(18) Potential hazards in the surrounding neighborhood, including train tracks and propane stations
(19) Assumptions or accommodations considered and used in design
12.4.1.4.5.5 The facility management plans shall be maintained and adjusted as necessary for changes to the venue structure, operating purposes and style, and event occupancy.
12.4.1.4.5.7 Facility management and operational plans shall be reviewed by the authority having jurisdiction (AHJ) annually.
12.4.1.4.5.7 For events and activities at the venue that are outside the normal operating conditions or vary from the normal facility management plans, the following shall apply:
(1) Facility management shall perform an event/activity-specific facility management plan for the authority having jurisdiction (AHJ) to review.
(2) The authority having jurisdiction (AHJ) shall provide guidance as needed, but approval of the authority having jurisdiction (AHJ) for the specific facility management plan shall occur prior to such event.
12.4.2* Smoke-Protected Assembly Seating.

12.4.2.1 To be considered smoke protected, an assembly seating facility shall comply with both of the following:
(1) All enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved, supervised automatic sprinkler system in accordance with Section 9.7, unless otherwise permitted by one of the following:
(a) The requirement of 12.4.2.1(1) shall not apply to the floor area used for contest, performance, or entertainment, provided that the roof construction is more than 50 ft (15 m) above the floor level and use is restricted to low fire hazard uses.
(b) Sprinklers shall not be required to be located over the floor area used for contest, performance, or entertainment and over the seating areas where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading.
12.4.2.2 To use the provisions of smoke-protected assembly seating, a facility shall be subject to a life safety evaluation in accordance with 12.4.1.
12.4.2.3 Minimum clear widths of aisles and other means of egress serving smoke-protected assembly seating shall be in accordance with Table 12.4.2.3.

| Table 12.4.2.3 Capacity Factors for Smoke-Protected Assembly Seating |
|--------------------------|-----------------|-----------------|
| No. of Seats | Clear Width per Seat Served | | |
| Stairs | Passageways, Ramps, and Doorways |
| in. | mm | in. | mm |

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12.4.2.4 Outdoor Smoke-Protected Assembly Seating.

12.4.2.4.1 Where smoke-protected assembly seating and its means of egress are located wholly outdoors, capacity shall be permitted to be provided in accordance with Table 12.4.2.4.1 and the provision of 12.4.2.4.2 shall apply.

Table 12.4.2.4.1 Capacity Factors for Outdoor Smoke-Protected Assembly Seating

<table>
<thead>
<tr>
<th>Feature</th>
<th>Clear Width per Seat Served</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stairs (in.)</td>
</tr>
<tr>
<td>Outdoor smoke-protected assembly seating</td>
<td>0.08 AB</td>
</tr>
</tbody>
</table>

12.4.2.4.2 Where the number of seats in outdoor smoke-protected assembly seating exceeds 20,000, the capacity factors of Table 12.4.2.3 shall be permitted to be used.

12.4.2.5 Where using Table 12.4.2.3, the number of seats specified shall be within a single assembly space, and interpolation shall be permitted between the specific values shown. A single seating space shall be permitted to have multiple levels, floors, or mezzanines.

12.4.2.6 The minimum clear widths shown in Table 12.4.2.3 and Table 12.4.2.4.1 shall be modified in accordance with all of the following:

1. If risers exceed 7 in. in height, the stair width in Table 12.4.2.3 and Table 12.4.2.4.1 shall be multiplied by factor $A$, where $A$ equals the following:

$$A = 1 + \frac{\text{riser height} - 7}{5}$$

2. If risers exceed 178 mm in height, the stair width in Table 12.4.2.3 and Table 12.4.2.4.1 shall be multiplied by factor $A$, where $A$ equals the following:

$$A = 1 + \frac{\text{riser height} - 178}{125}$$

3. Stairs not having a handrail within a 30 in. (760 mm) horizontal distance shall be 25 percent wider than otherwise calculated; that is, their width shall be multiplied by factor $B$, where $B$ equals the following:

$$B = 1.25$$

4. Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent; that is, their width shall be multiplied by factor $C$, where $C$ equals the following:

$$C = 1.10$$

12.4.2.7 Where smoke-protected assembly seating conforms to the requirements of 12.4.2, for rows of seats served by aisles or doorways at both ends, the number of seats per row shall not exceed...
100, and the clear width of not less than 12 in. (305 mm) for aisle accessways shall be increased by 0.3 in. (7.6 mm) for every additional seat beyond the number stipulated in Table 12.4.2.7; however, the minimum clear width shall not be required to exceed 22 in. (560 mm).

### Table 12.4.2.7 Smoke-Protected Assembly Seating Aisle Accessways

<table>
<thead>
<tr>
<th>Total Number of Seats in the Space</th>
<th>Number of Seats per Row Permitted to Have a Clear Width Aisle Accessway of Not Less than 12 in. (305 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aisle or Doorway at Both Ends of Row</td>
<td>Aisle or Doorway at One End of Row</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>&lt;4,000</td>
<td>14</td>
</tr>
<tr>
<td>4,000–6,999</td>
<td>15</td>
</tr>
<tr>
<td>7,000–9,999</td>
<td>16</td>
</tr>
<tr>
<td>10,000–12,999</td>
<td>17</td>
</tr>
<tr>
<td>13,000–15,999</td>
<td>18</td>
</tr>
<tr>
<td>16,000–18,999</td>
<td>19</td>
</tr>
<tr>
<td>19,000–21,999</td>
<td>20</td>
</tr>
<tr>
<td>≥22,000</td>
<td>21</td>
</tr>
</tbody>
</table>

**12.4.2.8** Where smoke-protected assembly seating conforms to the requirements of **12.4.2**, for rows of seats served by an aisle or doorway at one end only, the aisle accessway clear width of not less than 12 in. (305 mm) shall be increased by 0.6 in. (15 mm) for every additional seat beyond the number stipulated in Table 12.4.2.7; however, the minimum clear width shall not be required to exceed 22 in. (560 mm).

**12.4.2.9** Smoke-protected assembly seating conforming with the requirements of **12.4.2** shall be permitted to have a common path of travel of 50 ft (15 m) from any seat to a point where a person has a choice of two directions of egress travel.

**12.4.2.10** Aisle accessways shall be permitted to serve as one or both of the required exit accesses addressed in **12.4.2.9**, provided that the aisle accessway has a minimum width of 12 in. (305 mm) plus 0.3 in. (7.6 mm) for every additional seat over a total of 7 in a row.

**12.4.2.11** Where smoke-protected assembly seating conforms to the requirements of **12.4.2**, the dead ends in aisle stairs shall not exceed a distance of 21 rows, unless both of the following criteria are met:

1. The seats served by the dead-end aisle are not more than 40 seats from another aisle.
2. The 40-seat distance is measured along a row of seats having an aisle accessway with a clear width of not less than 12 in. (305 mm) plus 0.3 in. (7.6 mm) for each additional seat above 7 in the row.

**12.4.2.12** Where smoke-protected assembly seating conforms to the requirements of **12.4.2**, the travel distance from each seat to the nearest entrance to an egress vomitory or egress concourse shall not exceed 400 ft (122 m).

**12.4.2.13** Where smoke-protected assembly seating conforms to the requirements of **12.4.2**, the travel distance from the entrance to the vomitory or from the egress concourse to an approved egress stair, ramp, or walk at the building exterior shall not exceed 200 ft (61 m).
12.4.2.14 The travel distance requirements of 12.4.2.12 and 12.4.2.13 shall not apply to outdoor assembly seating facilities of Type I or Type II construction where all portions of the means of egress are essentially open to the outside.

12.4.3 Limited Access or Underground Buildings.
12.4.3.1 Limited access or underground buildings shall comply with 12.4.3 and Section 11.7.
12.4.3.2 Underground buildings or portions of buildings having a floor level more than 30 ft (9.1 m) below the level of exit discharge shall comply with the requirements of 12.4.3.3 through 12.4.3.5, unless otherwise permitted by one of the following:
   (1) This requirement shall not apply to areas within buildings used only for service to the building, such as boiler/heater rooms, cable vaults, and dead storage.
(2) This requirement shall not apply to auditoriums without intervening occupiable levels.
12.4.3.3 Each level more than 30 ft (9.1 m) below the level of exit discharge shall be divided into not less than two smoke compartments by a smoke barrier complying with Section 8.5 and shall have a minimum 1-hour fire resistance rating.
12.4.3.3.1 Smoke compartments shall comply with both of the following:
   (1) Each smoke compartment shall have access to not less than one exit without passing through the other required compartment.
(2) Any doors connecting required compartments shall be tight-fitting, minimum 1-hour-rated fire door assemblies designed and installed to minimize smoke leakage and to close and latch automatically upon detection of smoke.
12.4.3.3.2 Each smoke compartment shall be provided with a mechanical means of moving people vertically, such as an elevator or escalator.
12.4.3.3.3 Each smoke compartment shall have an independent air supply and exhaust system capable of smoke control or smoke exhaust functions. The system shall be in accordance with NFPA 92, Standard for Smoke Control Systems.
12.4.3.3.4 Throughout each smoke compartment shall be provided an automatic smoke detection system designed such that the activation of any two detectors causes the smoke control system to operate and the building voice alarm to sound.
12.4.3.3.5 Any required smoke control or exhaust system shall be provided with a standby power system complying with Article 701 of NFPA 70, National Electrical Code.
12.4.3.5 The building shall be provided with an approved, supervised voice alarm system, in accordance with Section 9.6, that complies with 9.6.3.9 and provides a prerecorded evacuation message.
12.4.4 High-Rise Buildings. High-rise assembly occupancy buildings and high-rise mixed occupancy buildings that house assembly occupancies in the high-rise portions of the building shall comply with Section 11.8.
12.4.5 Stages and Platforms. See 3.3.262 and 3.3.209.
12.4.5.1 Materials and Design.
12.4.5.1.1 Materials used in the construction of platforms and stages shall conform to the applicable requirements of the local building code.
12.4.5.1.2 Stage stairs shall be permitted to be of combustible materials, regardless of building construction type.
12.4.5.2 Platform Construction.
12.4.5.2.1 Temporary platforms shall be permitted to be constructed of any materials.
12.4.5.2.2 The space between the floor and the temporary platform above shall not be used for any purpose other than the electrical wiring to platform equipment.
12.4.5.2.3 Permanent platforms shall be of the materials required for the building construction type in which the permanent platform is located, except that the finish floor shall be permitted to be of wood in all types of construction.

12.4.5.2.4 Where the space beneath the permanent platform is used for storage or any purpose other than equipment wiring or plumbing, the floor construction shall not be less than 1-hour fire resistive.

12.4.5.3 Stage Construction.
12.4.5.3.1 Regular stages shall be of the materials required for the building construction type in which they are located. In all cases, the finish floor shall be permitted to be of wood.

12.4.5.3.2 Legitimate stages shall be constructed of materials required for Type I buildings, except that the area extending from the proscenium opening to the back wall of the stage, and for a distance of 6 ft (1830 mm) beyond the proscenium opening on each side, shall be permitted to be constructed of steel or heavy timber covered with a wood floor not less than 1½ in. (38 mm) in actual thickness.

12.4.5.3.3 Openings through stage floors shall be equipped with tight-fitting traps with approved safety locks, and such traps shall comply with one of the following:

(1) The traps shall be of wood having an actual thickness of not less than 1½ in. (38 mm).
(2) The traps shall be of a material that provides fire and heat resistance at least equivalent to that provided by wood traps having an actual thickness of not less than 1½ in. (38 mm).

12.4.5.4 Accessory Rooms.
12.4.5.4.1 Workshops, storerooms, permanent dressing rooms, and other accessory spaces contiguous to stages shall be separated from each other and other building areas by 1-hour fire resistance-rated construction and protected openings.

12.4.5.4.2 The separation requirements of 12.4.5.4.1 shall not be required for stages having a floor area not exceeding 1000 ft² (93 m²).

12.4.5.5 Ventilators. Regular stages in excess of 1000 ft² (93 m²) and legitimate stages shall be provided with emergency ventilation to provide a means of removing smoke and combustion gases directly to the outside in the event of a fire, and such ventilation shall be achieved by one or a combination of the methods specified in 12.4.5.5.1 through 12.4.5.5.3.

12.4.5.5.1 Smoke Control.
12.4.5.5.1.1 A means complying with Section 9.3 shall be provided to maintain the smoke level at not less than 6 ft (1830 mm) above the highest level of assembly seating or above the top of the proscenium opening where a proscenium wall and opening protection are provided.

12.4.5.5.1.2 Smoke control systems used for compliance with 12.4.5.5.1.1 shall be in accordance with NFPA 92, Standard for Smoke Control Systems.

12.4.5.5.1.3 The smoke control system shall be activated independently by each of the following:

(1) Activation of the sprinkler system in the stage area
(2) Activation of smoke detectors over the stage area
(3) Activation by manually operated switch at an approved location

12.4.5.5.1.4 The emergency ventilation system shall be supplied by both normal and standby power.

12.4.5.5.1.5 The fan(s) power wiring and ducts shall be located and properly protected to ensure a minimum of 20 minutes of operation in the event of activation.

12.4.5.5.2 Roof Vents.
12.4.5.5.2.1 Two or more vents shall be located near the center of and above the highest part of the stage area.

12.4.5.5.2.2 The vents shall be raised above the roof and shall provide a net free vent area equal to 5 percent of the stage area.
12.4.5.5.2.3 Vents shall be constructed to open automatically by approved heat-activated devices, and supplemental means shall be provided for manual operation and periodic testing of the ventilator from the stage floor.

12.4.5.5.2.4 Vents shall be labeled.

12.4.5.5.3 Other Means. Approved, alternate means of removing smoke and combustion gases shall be permitted.

12.4.5.6 Proscenium Walls. Legitimate stages shall be completely separated from the seating area by a proscenium wall of not less than 2-hour fire-resistive, noncombustible construction.

12.4.5.6.1 The proscenium wall shall extend not less than 48 in. (1220 mm) above the roof of the auditorium in combustible construction.

12.4.5.6.2 All openings in the proscenium wall of a legitimate stage shall be protected by a fire assembly having a minimum 1½-hour fire protection rating.

12.4.5.6.3 The main proscenium opening used for viewing performances shall be provided with proscenium opening protection as described in 12.4.5.7.

12.4.5.6.4 Proscenium walls shall not be required in smoke-protected assembly seating facilities constructed and operated in accordance with 12.4.2.

12.4.5.7 Proscenium Opening Protection.

12.4.5.7.1 Where required by 12.4.5.6, the proscenium opening shall be protected by a listed, minimum 20-minute opening protective assembly, a fire curtain complying with NFPA 80, Standard for Fire Doors and Other Opening Protectives, or an approved water curtain complying with NFPA 13, Standard for the Installation of Sprinkler Systems.

12.4.5.7.2 Proscenium opening protection provided by other than a fire curtain shall activate upon automatic detection of a fire and upon manual activation.

12.4.5.8 Gridiron, Fly Galleries, and Pinrails.

12.4.5.8.1 Structural framing designed only for the attachment of portable or fixed theater equipment, gridirons, galleries, and catwalks shall be constructed of materials consistent with the building construction type, and a fire resistance rating shall not be required.

12.4.5.8.2 Fire-retardant-treated wood shall be permitted for fly galleries and pinrails of all types of construction.

12.4.5.8.3 Combustible materials shall be permitted to be used for the floors of galleries and catwalks of all construction types.

12.4.5.9 Catwalks. The clear width of lighting and access catwalks and the means of egress from galleries and gridirons shall be not less than 22 in. (560 mm).

12.4.5.10 Fire Protection. Every stage shall be protected by an approved, supervised automatic sprinkler system in compliance with Section 9.7.

12.4.5.10.1 Protection shall be provided throughout the stage and in storerooms, workshops, permanent dressing rooms, and other accessory spaces contiguous to stages.

12.4.5.10.2 Sprinklers shall not be required for stages 1000 ft² (93 m²) or less in area and 50 ft (15 m) or less in height where both of the following criteria are met:

1. Curtains, scenery, or other combustible hangings are not retractable vertically.
2. Combustible hangings are limited to borders, legs, a single main curtain, and a single backdrop.

12.4.5.10.3 Sprinklers shall not be required under stage areas less than 48 in. (1220 mm) in clear height that are used exclusively for chair or table storage and lined on the inside with 5/8 in. (16 mm) Type X gypsum wallboard or the approved equivalent.
12.4.5.11 Flame-Retardant Requirements.

12.4.5.11.1 Combustible scenery of cloth, film, vegetation (dry), and similar materials shall comply with one of the following:
(1) They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.
(2) They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source.

12.4.5.11.2 Foamed plastics (see definition of cellular or foamed plastic in 3.3.41) shall be permitted to be used if they exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source or by specific approval of the authority having jurisdiction.

12.4.5.11.3 Scenery and stage properties not separated from the audience by proscenium opening protection shall be of noncombustible materials, limited-combustible materials, or fire-retardant-treated wood.

12.4.5.11.4 In theaters, motion picture theaters, and television stage settings, with or without horizontal projections, and in simulated caves and caverns of foamed stage settings, any single fuel package shall have a heat release rate not to exceed 100 kW where tested in accordance with one of the following:
(1) ANSI/UL 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes
(2) NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source

12.4.5.12* Standpipes.

12.4.5.12.1 Regular stages over 1000 ft² (93 m²) in area and all legitimate stages shall be equipped with 1½ in. (38 mm) hose lines for first-aid fire fighting at each side of the stage.

12.4.5.12.2 Hose connections shall be in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, unless Class II or Class III standpipes in accordance with NFPA 14, Standard for the Installation of Standpipe and Hose Systems, are used.

12.4.6 Projection Rooms.

12.4.6.1 Projection rooms shall comply with 12.4.6.2 through 12.4.6.10.

12.4.6.2 Where cellulose nitrate film is used, the projection room shall comply with NFPA 40, Standard for the Storage and Handling of Cellulose Nitrate Film.

12.4.6.3 Film or video projectors or spotlights utilizing light sources that produce particulate matter or toxic gases, or light sources that produce hazardous radiation, without protective shielding shall be located within a projection room complying with 12.3.2.1.2.

12.4.6.4 Every projection room shall be of permanent construction consistent with the building construction type in which the projection room is located and shall comply with the following:
(1) Openings shall not be required to be protected.
(2) The room shall have a floor area of not less than 80 ft² (7.4 m²) for a single machine and not less than 40 ft² (3.7 m²) for each additional machine.
Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space of not less than 30 in. (760 mm) on each side and at its rear, but only one such space shall be required between adjacent projectors.

The projection room and the rooms appurtenant to it shall have a ceiling height of not less than 7 ft 6 in. (2285 mm).

Each projection room for safety film shall have not less than one out-swinging, self-closing door not less than 30 in. (760 mm) wide and 6 ft 8 in. (2030 mm) high.

The aggregate of ports and openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium, and all openings shall be provided with glass or other approved material so as to completely close the opening.

Projection room ventilation shall comply with 12.4.6.8.1 and 12.4.6.8.2.

Supply Air.

Each projection room shall be provided with adequate air supply inlets arranged to provide well-distributed air throughout the room.

Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment.

Air shall be permitted to be taken from the outside; from adjacent spaces within the building, provided that the volume and infiltration rate is sufficient; or from the building air-conditioning system, provided that it is arranged to supply sufficient air whether or not other systems are in operation.

Exhaust Air.

Projection booths shall be permitted to be exhausted through the lamp exhaust system.

The lamp exhaust system shall be positively interconnected with the lamp so that the lamp cannot operate unless there is sufficient airflow required for the lamp.

Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system.

The projection room ventilation system shall be permitted also to serve appurtenant rooms, such as the generator room and the rewind room.

Each projection machine shall be provided with an exhaust duct that draws air from each lamp and exhausting it directly to the outside of the building.

The lamp exhaust shall be permitted to exhaust air from the projection room to provide room air circulation.

Lamp exhaust ducts shall be of rigid materials, except for a flexible connector approved for the purpose.

The projection lamp and projection room exhaust systems shall be permitted to be combined but shall not be interconnected with any other exhaust system or return-air system within the buildings.

Specifications for electric arc and xenon projection equipment shall comply with 12.4.6.9.4.1 and 12.4.6.9.4.2.

Electric Arc Projection Equipment. The exhaust capacity shall be 200 ft³/min (0.09 m³/s) for each lamp connected to the lamp exhaust system, or as recommended by the equipment manufacturer, and auxiliary air shall be permitted to be introduced into the system through a screened opening to stabilize the arc.

Xenon Projection Equipment. The lamp exhaust system shall exhaust not less than 300 ft³/min (0.14 m³/s) per lamp, or not less than the exhaust volume required or recommended by the equipment manufacturer, whichever is greater.

Miscellaneous equipment and storage shall be protected as follows:

(1) Each projection room shall be provided with rewind and film storage facilities.
(2) Flammable liquids containers shall be permitted in projection rooms, provided that all of the following criteria are met:
   (a) There are not more than four containers per projection room.
   (b) No container has a capacity exceeding 16 oz (0.5 L).
   (c) The containers are of a nonbreakable type.
(3) Appurtenant electrical equipment, such as rheostats, transformers, and generators, shall be permitted to be located within the booth or in a separate room of equivalent construction.

12.4.7* Special Amusement Buildings.
12.4.7.1* General. Special amusement buildings, regardless of occupant load, shall meet the requirements for assembly occupancies in addition to the requirements of 12.4.7, unless the special amusement building is a multilevel play structure that is not more than 10 ft (3050 mm) in height and has aggregate horizontal projections not exceeding 160 ft² (15 m²).
12.4.7.2* Automatic Sprinklers. Every special amusement building, other than buildings or structures not exceeding 10 ft (3050 mm) in height and not exceeding 160 ft² (15 m²) in aggregate horizontal projection, shall be protected throughout by an approved, supervised automatic sprinkler system installed and maintained in accordance with Section 9.7.
12.4.7.3 Temporary Water Supply. Where the special amusement building required to be sprinklered by 12.4.7.2 is movable or portable, the sprinkler water supply shall be permitted to be provided by an approved temporary means.
12.4.7.4 Smoke Detection. Where the nature of the special amusement building is such that it operates in reduced lighting levels, the building shall be protected throughout by an approved automatic smoke detection system in accordance with Section 9.6.
12.4.7.5 Alarm Initiation. Actuation of any smoke detection system device shall sound an alarm at a constantly attended location on the premises.
12.4.7.6 Illumination. Actuation of the automatic sprinkler system, or any other suppression system, or actuation of a smoke detection system having an approved verification or cross-zoning operation capability shall provide for both of the following:
   (1) Increase in illumination in the means of egress to that required by Section 7.8
   (2) Termination of any conflicting or confusing sounds and visuals
12.4.7.7 Exit Marking.
12.4.7.7.1 Exit marking shall be in accordance with Section 7.10.
12.4.7.7.2 Floor proximity exit signs shall be provided in accordance with 7.10.1.6.
12.4.7.7.3* In special amusement buildings where mazes, mirrors, or other designs are used to confound the egress path, approved directional exit marking that becomes apparent in an emergency shall be provided.
12.4.7.8 Interior Finish. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A throughout.
12.4.8 Grandstands.
12.4.8.1 General. Grandstands shall comply with the provisions of this chapter as modified by 12.4.8.
12.4.8.2 Seating.
12.4.8.2.1 Where grandstand seating without backs is used indoors, rows of seats shall be spaced not less than 22 in. (560 mm) back-to-back.
12.4.8.2.2 The depth of footboards and seat boards in grandstands shall be not less than 9 in. (230 mm); where the same level is not used for both seat foundations and footrests, footrests independent of seats shall be provided.
12.4.8.2.3 Seats and footrests of grandstands shall be supported securely and fastened in such a manner that they cannot be displaced inadvertently.
12.4.8.2.4 Individual seats or chairs shall be permitted only if secured in rows in an approved manner, unless seats do not exceed 16 in number and are located on level floors and within railed-in enclosures, such as boxes.

12.4.8.2.5 The maximum number of seats permitted between the farthest seat and an aisle in grandstands and bleachers shall not exceed that shown in Table 12.4.8.2.5.

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12.4.8.3 Special Requirements — Wood Grandstands.

12.4.8.3.1 An outdoor wood grandstand shall be erected within not less than two-thirds of its height, and, in no case, within not less than 10 ft (3050 mm), of a building, unless otherwise permitted by one of the following:

1. The distance requirement shall not apply to buildings having minimum 1-hour fire resistance-rated construction with openings protected against the fire exposure hazard created by the grandstand.
2. The distance requirement shall not apply where a wall having minimum 1-hour fire resistance-rated construction separates the grandstand from the building.

12.4.8.3.2 An outdoor wood grandstand unit shall not exceed 10,000 ft² (929 m²) in finished ground level area or 200 ft (61 m) in length, and all of the following requirements also shall apply:

1. Grandstand units of the maximum size shall be placed not less than 20 ft (6100 mm) apart or shall be separated by walls having a minimum 1-hour fire resistance rating.
2. The number of grandstand units erected in any one group shall not exceed three.
3. Each group of grandstand units shall be separated from any other group by a wall having minimum 2-hour fire resistance-rated construction extending 24 in. (610 mm) above the seat platforms or by an open space of not less than 50 ft (15 m).

12.4.8.3.3 The finished ground level area or length required by 12.4.8.3.2 shall be permitted to be doubled where one of the following criteria is met:

1. Where the grandstand is constructed entirely of labeled fire-retardant-treated wood that has passed the standard rain test, ASTM D 2898, Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
2. Where the grandstand is constructed of members conforming to dimensions for heavy timber construction [Type IV (2HH)]

12.4.8.3.4 The highest level of seat platforms above the finished ground level or the surface at the front of any wood grandstand shall not exceed 20 ft (6100 mm).

12.4.8.3.5 The highest level of seat platforms above the finished ground level, or the surface at the front of a portable grandstand within a tent or membrane structure, shall not exceed 12 ft (3660 mm).

12.4.8.3.6 The height requirements specified in 12.4.8.3.4 and 12.4.8.3.5 shall be permitted to be doubled where constructed entirely of labeled fire-retardant-treated wood that has passed the standard rain test, ASTM D 2898, Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing, or where constructed of members conforming to dimensions for heavy timber construction [Type IV (2HH)].

12.4.8.4 Special Requirements — Portable Grandstands.

12.4.8.4.1 Portable grandstands shall conform to the requirements of 12.4.8 for grandstands and the requirements of 12.4.8.4.2 through 12.4.8.4.7.
12.4.8.4.2 Portable grandstands shall be self-contained and shall have within them all necessary parts to withstand and restrain all forces that might be developed during human occupancy.

12.4.8.4.3 Portable grandstands shall be designed and manufactured so that, if any structural members essential to the strength and stability of the structure have been omitted during erection, the presence of unused connection fittings shall make the omissions self-evident.

12.4.8.4.4 Portable grandstand construction shall be skillfully accomplished to produce the strength required by the design.

12.4.8.4.5 Portable grandstands shall be provided with base plates, sills, floor runners, or sleepers of such area that the permitted bearing capacity of the supporting material is not exceeded.

12.4.8.4.6 Where a portable grandstand rests directly on a base of such character that it is incapable of supporting the load without appreciable settlement, mud sills of suitable material, having sufficient area to prevent undue or dangerous settlement, shall be installed under base plates, runners, or sleepers.

12.4.8.4.7 All bearing surfaces of portable grandstands shall be in contact with each other.

12.4.8.5 Spaces Underneath Grandstands. Spaces underneath a grandstand shall be kept free of flammable or combustible materials, unless protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 or unless otherwise permitted by one of the following:

1. This requirement shall not apply to accessory uses of 300 ft² (28 m²) or less, such as ticket booths, toilet facilities, or concession booths, where constructed of noncombustible or fire-resistive construction in otherwise nonsprinklered facilities.

2. This requirement shall not apply to rooms that are enclosed in not less than 1-hour fire resistance-rated construction and are less than 1000 ft² (93 m²) in otherwise nonsprinklered facilities.

12.4.8.6 Guards and Railings.

12.4.8.6.1 Railings or guards not less than 42 in. (1065 mm) above the aisle surface or footrest or not less than 36 in. (915 mm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all grandstands where the seats are more than 48 in. (1220 mm) above the floor or the finished ground level.

12.4.8.6.2 The requirement of 12.4.8.6.1 shall not apply where an adjacent wall or fence affords equivalent safeguard.

12.4.8.6.3 Where the front footrest of any grandstand is more than 24 in. (610 mm) above the floor, railings or guards not less than 33 in. (825 mm) above such footrests shall be provided.

12.4.8.6.4 The railings required by 12.4.8.6.3 shall be permitted to be not less than 26 in. (660 mm) high in grandstands or where the front row of seats includes backrests.

12.4.8.6.5 Cross aisles located within the seating area shall be provided with rails not less than 26 in. (660 mm) high along the front edge of the cross aisle.

12.4.8.6.6 The railings specified by 12.4.8.6.5 shall not be required where the backs of the seats in front of the cross aisle project 24 in. (610 mm) or more above the surface of the cross aisle.

12.4.8.6.7 Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

12.4.8.6.8 An opening between the seat board and footboard located more than 30 in. (760 mm) above the finished ground level shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

12.4.9 Folding and Telescopic Seating.

12.4.9.1 General. Folding and telescopic seating shall comply with the provisions of this chapter as modified by 12.4.9.

12.4.9.2 Seating.
12.4.9.2.1 The horizontal distance of seats, measured back-to-back, shall be not less than 22 in. (560 mm) for seats without backs, and all of the following requirements shall also apply:

(1) There shall be a space of not less than 12 in. (305 mm) between the back of each seat and the front of each seat immediately behind it.

(2) If seats are of the chair type, the 12 in. (305 mm) dimension shall be measured to the front edge of the rear seat in its normal unoccupied position.

(3) All measurements shall be taken between plumb lines.

12.4.9.2.2 The depth of footboards (footrests) and seat boards in folding and telescopic seating shall be not less than 9 in. (230 mm).

12.4.9.2.3 Where the same level is not used for both seat foundations and footrests, footrests independent of seats shall be provided.

12.4.9.2.4 Individual chair-type seats shall be permitted in folding and telescopic seating only if firmly secured in groups of not less than three.

12.4.9.2.5 The maximum number of seats permitted between the farthest seat in an aisle in folding and telescopic seating shall not exceed that shown in Table 12.4.8.2.5.

12.4.9.3 Guards and Railings.

12.4.9.3.1 Railings or guards not less than 42 in. (1065 mm) above the aisle surface or footrest, or not less than 36 in. (915 mm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all folding and telescopic seating where the seats are more than 48 in. (1220 mm) above the floor or the finished ground level.

12.4.9.3.2 The requirement of 12.4.9.3.1 shall not apply where an adjacent wall or fence affords equivalent safeguard.

12.4.9.3.3 Where the front footrest of folding or telescopic seating is more than 24 in. (610 mm) above the floor, railings or guards not less than 33 in. (825 mm) above such footrests shall be provided.

12.4.9.3.4 The railings required by 12.4.9.3.3 shall be permitted to be not less than 26 in. (660 mm) high where the front row of seats includes backrests.

12.4.9.3.5 Cross aisles located within the seating area shall be provided with rails not less than 26 in. (660 mm) high along the front edge of the cross aisle.

12.4.9.3.6 The railings specified by 12.4.9.3.5 shall not be required where the backs of the seats in front of the cross aisle project 24 in. (610 mm) or more above the surface of the cross aisle.

12.4.9.3.7 Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

12.4.9.3.8 An opening between the seat board and footboard located more than 30 in. (760 mm) above the finished ground level shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

12.4.10 Airport Loading Walkways.

12.4.10.1 Airport loading walkways shall conform to NFPA 415, Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways, and the provisions of 12.4.10.2 and 12.4.10.3.

12.4.10.2 Doors in the egress path from the aircraft through the airport loading walkway into the airport terminal building shall meet both of the following criteria:

(1) They shall swing in the direction of egress from the aircraft.

(2) They shall not be permitted to have delayed-egress locks.

12.4.10.3 Exit access shall be unimpeded from the airport loading walkway to the nonsecured public areas of the airport terminal building.

12.5 Building Services.
12.5.1 Utilities. Utilities shall comply with the provisions of Section 9.1.

12.5.2 Heating, Ventilating, and Air-Conditioning Equipment. Heating, ventilating, and air-conditioning equipment shall comply with the provisions of Section 9.2.

12.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 9.4.

12.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 9.5.

12.6 Reserved.

12.7 Operating Features.

12.7.1 Means of Egress Inspection.

12.7.1.1 The building owner or agent shall inspect the means of egress to ensure it is maintained free of obstructions, and correct any deficiencies found, prior to each opening of the building to the public.

12.7.1.2 The building owner or agent shall prepare and maintain records of the date and time of each inspection on approved forms, listing any deficiencies found and actions taken to correct them.

12.7.1.3 Inspection of Door Openings. Door openings shall be inspected in accordance with 7.2.1.15.

12.7.2 Special Provisions for Food Service Operations.

12.7.2.1 All devices in connection with the preparation of food shall be installed and operated to avoid hazard to the safety of occupants.

12.7.2.2 All devices in connection with the preparation of food shall be of an approved type and shall be installed in an approved manner.

12.7.2.3 Food preparation facilities shall be protected in accordance with 9.2.3 and shall not be required to have openings protected between food preparation areas and dining areas.

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12.7.2.4 Portable cooking equipment that is not flue-connected shall be permitted only as follows:

(1) Equipment fueled by small heat sources that can be readily extinguished by water, such as candles or alcohol-burning equipment, including solid alcohol, shall be permitted to be used, provided that precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

(2) Candles shall be permitted to be used on tables used for food service where securely supported on substantial noncombustible bases located to avoid danger of ignition of combustible materials and only where approved by the authority having jurisdiction.

(3) Candle flames shall be protected.

(4) "Flaming sword" or other equipment involving open flames and flamed dishes, such as cherries jubilee or crêpes suzette, shall be permitted to be used, provided that precautions subject to the approval of the authority having jurisdiction are taken.

(5) Listed and approved LP-Gas commercial food service appliances shall be permitted to be used where in accordance with NFPA 58, Liquefied Petroleum Gas Code.

12.7.3 Open Flame Devices and Pyrotechnics. No open flame devices or pyrotechnic devices shall be used in any assembly occupancy, unless otherwise permitted by one of the following:

(1) Pyrotechnic special effect devices shall be permitted to be used on stages before proximate audiences for ceremonial or religious purposes, as part of a demonstration in exhibits, or as part of a performance, provided that both of the following criteria are met:

(a) Precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material.
(b) Use of the pyrotechnic device complies with NFPA 1126, Standard for the Use of Pyrotechnics Before a Proximate Audience.

(2) Flame effects before an audience shall be permitted in accordance with NFPA 160, Standard for the Use of Flame Effects Before an Audience.

(3) Open flame devices shall be permitted to be used in the following situations, provided that precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material or injury to occupants:

(a) For ceremonial or religious purposes
(b) On stages and platforms where part of a performance
(c) Where candles on tables are securely supported on substantial noncombustible bases and candle flame is protected

(4) The requirement of 12.7.3 shall not apply to heat-producing equipment complying with 9.2.2.

(5) The requirement of 12.7.3 shall not apply to food service operations in accordance with 12.7.2.

(6) Gas lights shall be permitted to be used, provided that precautions are taken, subject to the approval of the authority having jurisdiction, to prevent ignition of any combustible materials.

12.7.4 Furnishings, Decorations, and Scenery.

12.7.4.1 Fabrics and films used for decorative purposes, all draperies and curtains, and similar furnishings shall be in accordance with the provisions of 10.3.1.

12.7.4.2 The authority having jurisdiction shall impose controls on the quantity and arrangement of combustible contents in assembly occupancies to provide an adequate level of safety to life from fire.

12.7.4.3 Exposed foamed plastic materials and unprotected materials containing foamed plastic used for decorative purposes or stage scenery shall have a heat release rate not exceeding 100 kW where tested in accordance with one of the following:

1. ANSI/UL 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes
2. NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source

12.7.4.4 The requirement of 12.7.4.3 shall not apply to individual foamed plastic items and items containing foamed plastic where the foamed plastic does not exceed 1 lb (0.45 kg) in weight.

12.7.5 Special Provisions for Exposition Facilities.

12.7.5.1 General. No display or exhibit shall be installed or operated to interfere in any way with access to any required exit or with the visibility of any required exit or required exit sign; nor shall any display block access to fire-fighting equipment.

12.7.5.2 Materials Not On Display. A storage room having an enclosure consisting of a smoke barrier having a minimum 1-hour fire resistance rating and protected by an automatic extinguishing system shall be provided for combustible materials not on display, including combustible packing crates used to ship exhibitors’ supplies and products.

12.7.5.3 Exhibits.

12.7.5.3.1 Exhibits shall comply with 12.7.5.3.2 through 12.7.5.3.11.

12.7.5.3.2 The travel distance within the exhibit booth or exhibit enclosure to an exit access aisle shall not exceed 50 ft (15 m).

12.7.5.3.3 The upper deck of multilevel exhibits exceeding 300 ft² (28 m²) shall have not less than two remote means of egress.
12.7.5.3.4 Exhibit booth construction materials shall be limited to the following:

1. Noncombustible or limited-combustible materials
2. Wood exceeding ¼ in. (6.3 mm) nominal thickness
3. Wood that is pressure-treated, fire-retardant wood meeting the requirements of NFPA 703, *Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials*
4. Flame-retardant materials complying with one of the following:
   a. They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701, *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*.
   b. They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289, *Standard Method of Fire Test for Individual Fuel Packages*, using the 20 kW ignition source.
5. Textile wall coverings, such as carpeting and similar products used as wall or ceiling finishes, complying with the provisions of 10.2.2 and 10.2.4
6. Plastics limited to those that comply with 12.3.3 and Section 10.2
7. Foamed plastics and materials containing foamed plastics having a heat release rate for any single fuel package that does not exceed 100 kW where tested in accordance with one of the following:
   b. NFPA 289, *Standard Method of Fire Test for Individual Fuel Packages*, using the 20 kW ignition source
8. Cardboard, honeycombed paper, and other combustible materials having a heat release rate for any single fuel package that does not exceed 150 kW where tested in accordance with one of the following:
   a. ANSI/UL UL 1975
   b. NFPA 289, using the 20 kW ignition source

12.7.5.3.5 Curtains, drapes, and decorations shall comply with 10.3.1.

12.7.5.3.6 Acoustical and decorative material including, but not limited to, cotton, hay, paper, straw, moss, split bamboo, and wood chips shall be flame-retardant treated to the satisfaction of the authority having jurisdiction.

12.7.5.3.6.1 Materials that cannot be treated for flame retardancy shall not be used.

12.7.5.3.6.2 Foamed plastics, and materials containing foamed plastics and used as decorative objects such as, but not limited to, mannequins, murals, and signs, shall have a heat release rate for any single fuel package that does not exceed 150 kW where tested in accordance with one of the following:

2. NFPA 289, *Standard Method of Fire Test for Individual Fuel Packages*, using the 20 kW ignition source

12.7.5.3.6.3 Where the aggregate area of acoustical and decorative materials is less than 10 percent of the individual floor or wall area, such materials shall be permitted to be used subject to the approval of the authority having jurisdiction.

12.7.5.3.7 The following shall be protected by automatic extinguishing systems:

1. Single-level exhibit booths exceeding 300 ft² (28 m²) and covered with a ceiling
(2) Each level of multilevel exhibit booths, including the uppermost level where the uppermost level is covered with a ceiling

12.7.5.3.7.1 The requirements of 12.7.5.3.7 shall not apply where otherwise permitted by the following:

(1) Ceilings that are constructed of open grate design or listed dropout ceilings in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, shall not be considered ceilings within the context of 12.7.5.3.7.

(2) Vehicles, boats, and similar exhibited products having over 100 ft² (9.3 m²) of roofed area shall be provided with smoke detectors acceptable to the authority having jurisdiction.

(3)* The requirement of 12.7.5.3.7(2) shall not apply where fire protection of multilevel exhibit booths is consistent with the criteria developed through a life safety evaluation of the exhibition hall in accordance with 12.4.1, subject to approval of the authority having jurisdiction.

12.7.5.3.7.2 A single exhibit or group of exhibits with ceilings that do not require sprinklers shall be separated by a distance of not less than 10 ft (3050 mm) where the aggregate ceiling exceeds 300 ft² (28 m²).

12.7.5.3.7.3 The water supply and piping for the sprinkler system shall be permitted to be of an approved temporary means that is provided by a domestic water supply, a standpipe system, or a sprinkler system.

12.7.5.3.8 Open flame devices within exhibit booths shall comply with 12.7.3.

12.7.5.3.9 Cooking and food-warming devices in exhibit booths shall comply with 12.7.2 and all of the following:

(1) Gas-fired devices shall comply with the following:
   (a) Natural gas-fired devices shall comply with 9.1.1.
   (b) The requirement of 12.7.5.3.9(1)(a) shall not apply to compressed natural gas where permitted by the authority having jurisdiction.
   (c) The use of LP-Gas cylinders shall be prohibited.
   (d) Nonrefillable LP-Gas cylinders shall be approved for use where permitted by the authority having jurisdiction.

(2) The devices shall be isolated from the public by not less than 48 in. (1220 mm) or by a barrier between the devices and the public.

(3) Multi-well cooking equipment using combustible oils or solids shall comply with 9.2.3.

(4) Single-well cooking equipment using combustible oils or solids shall meet all of the following criteria:
   (a) The equipment shall have lids available for immediate use.
   (b) The equipment shall be limited to 2 ft² (0.2 m²) of cooking surface.
   (c) The equipment shall be placed on noncombustible surface materials.
   (d) The equipment shall be separated from each other by a horizontal distance of not less than 24 in. (610 mm).
   (e) The requirement of 12.7.5.3.9(4)(d) shall not apply to multiple single-well cooking equipment where the aggregate cooking surface area does not exceed 2 ft² (0.2 m²).
   (f) The equipment shall be kept at a horizontal distance of not less than 24 in. (610 mm) from any combustible material.

(5) A portable fire extinguisher in accordance with 9.7.4.1 shall be provided within the booth for each device, or an approved automatic extinguishing system shall be provided.

12.7.5.3.10 Combustible materials within exhibit booths shall be limited to a one-day supply. Storage of combustible materials behind the booth shall be prohibited. (See 12.7.4.2 and 12.7.5.2.)
12.7.5.3.11 Plans for the exposition, in an acceptable form, shall be submitted to the authority having jurisdiction for approval prior to setting up any exhibit.

12.7.5.3.11.1 The plan shall show all details of the proposed exposition.

12.7.5.3.11.2 No exposition shall occupy any exposition facility without approved plans.

12.7.5.4 Vehicles. Vehicles on display within an exposition facility shall comply with 12.7.5.4.1 through 12.7.5.4.5.

12.7.5.4.1 All fuel tank openings shall be locked and sealed in an approved manner to prevent the escape of vapors; fuel tanks shall not contain in excess of one-half their capacity or contain in excess of 10 gal (38 L) of fuel, whichever is less.

12.7.5.4.2 At least one battery cable shall be removed from the batteries used to start the vehicle engine, and the disconnected battery cable shall then be taped.

12.7.5.4.3 Batteries used to power auxiliary equipment shall be permitted to be kept in service.

12.7.5.4.4 Fueling or defueling of vehicles shall be prohibited.

12.7.5.4.5 Vehicles shall not be moved during exhibit hours.

12.7.5.5 Prohibited Materials.

12.7.5.5.1 The following items shall be prohibited within exhibit halls:
   (1) Compressed flammable gases
   (2) Flammable or combustible liquids
   (3) Hazardous chemicals or materials
   (4) Class II or greater lasers, blasting agents, and explosives

12.7.5.5.2 The authority having jurisdiction shall be permitted to allow the limited use of any items specified in 12.7.5.5.1 under special circumstances.

12.7.5.6 Alternatives. See Section 12.4.

12.7.6 Crowd Managers.

12.7.6.1 Assembly occupancies shall be provided with a minimum of one trained crowd manager or crowd manager supervisor. Where the occupant load exceeds 250, additional trained crowd managers or crowd manager supervisors shall be provided at a ratio of one crowd manager or crowd manager supervisor for every 250 occupants, unless otherwise permitted by one of the following:
   (1) This requirement shall not apply to assembly occupancies used exclusively for religious worship with an occupant load not exceeding 2000.
   (2) The ratio of trained crowd managers to occupants shall be permitted to be reduced where, in the opinion of the authority having jurisdiction (AHJ), the existence of an approved, supervised automatic sprinkler system and the nature of the event warrant.

12.7.6.2 The crowd manager and crowd manager supervisor shall receive approved training in crowd management techniques.

12.7.6.3 Duties and responsibilities for the crowd manager and crowd manager supervisor shall be documented within a written emergency plan as required by 12.7.13.

12.7.6.4 The training for the duties and responsibilities of crowd managers shall include the following:
   (1) Role and responsibilities of the crowd manager
   (2) Understanding hazards that can endanger public assembly
   (3) Understanding and managing crowds
   (4) Introduction to fire safety and fire safety equipment
(5) Understanding methods of evacuation and movement
(6) Introduction to the venue
(7) Understanding venue services, polices, and procedures
(8) Understanding the venue’s emergency response and evacuation plan and shelter-in-place procedures:
(9) Familiarization with the venue familiarization and guest services training
(10) Other specific event-warranted training

12.7.6.5 The training for the duties and responsibilities of crowd manager supervisors shall include the following:
(1) The duties described in 12.7.6.4
(2) Role and responsibilities of the crowd manager supervisor
(3) Understanding of incident management procedures
(4) Demonstrate Understanding of the venue’s layout and design
(5) Introduction to the venue’s command structure

12.7.7* Drills.
12.7.7.1 The employees or attendants of assembly occupancies shall be trained and drilled in the duties they are to perform in case of fire, panic, or other emergency to effect orderly exiting.
12.7.7.2 Employees or attendants of assembly occupancies shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment where provided.
12.7.7.3* In the following assembly occupancies, an audible announcement shall be made, or a projected image shall be shown, prior to the start of each program that notifies occupants of the location of the exits to be used in case of a fire or other emergency:
(1) Theaters
(2) Motion picture theaters
(3) Auditoriums
(4) Other similar assembly occupancies with occupant loads exceeding 300 where there are noncontinuous programs

12.7.7.4 The requirement of 12.7.7.3 shall not apply to assembly occupancies in schools where used for nonpublic events.

12.7.8* Smoking.
12.7.8.1 Smoking in assembly occupancies shall be regulated by the authority having jurisdiction.
12.7.8.2 In rooms or areas where smoking is prohibited, plainly visible signs shall be posted that read as follows:

NO SMOKING

12.7.8.3 No person shall smoke in prohibited areas that are so posted, unless permitted by the authority having jurisdiction under both of the following conditions:
(1) Smoking shall be permitted on a stage only where it is a necessary and rehearsed part of a performance.
(2) Smoking shall be permitted only where the smoker is a regular performing member of the cast.

12.7.8.4 Where smoking is permitted, suitable ashtrays or receptacles shall be provided in convenient locations.

12.7.9* Seating.
12.7.9.1 Secured Seating.
12.7.9.1.1 Seats in assembly occupancies accommodating more than 200 persons shall be securely fastened to the floor, except where fastened together in groups of not less than three and as permitted by 12.7.9.1.2 and 12.7.9.2.
12.7.9.1.2 Balcony and box seating areas that are separated from other areas by rails, guards, partial-height walls, or other physical barriers and have a maximum of 14 seats shall be exempt from the requirement of 12.7.9.1.1.

12.7.9.2 Unsecured Seating.
12.7.9.2.1 Seats not secured to the floor shall be permitted in restaurants, night clubs, and other occupancies where fastening seats to the floor might be impracticable.
12.7.9.2.2 Unsecured seats shall be permitted, provided that, in the area used for seating, excluding such areas as dance floors and stages, there is not more than one seat for each 15 ft² (1.4 m²) of net floor area, and adequate aisles to reach exits are maintained at all times.
12.7.9.2.3 Seating diagrams shall be submitted for approval by the authority having jurisdiction to permit an increase in occupant load per 7.3.1.3.

12.7.9.3 Occupant Load Posting.
12.7.9.3.1 Every room constituting an assembly occupancy and not having fixed seats shall have the occupant load of the room posted in a conspicuous place near the main exit from the room.
12.7.9.3.2 Approved signs shall be maintained in a legible manner by the owner or authorized agent.
12.7.9.3.3 Signs shall be durable and shall indicate the number of occupants permitted for each room use.

12.7.10 Maintenance of Outdoor Grandstands.
12.7.10.1 The owner shall provide for not less than annual inspection and required maintenance of each outdoor grandstand to ensure safe conditions.
12.7.10.2 At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.
12.7.10.3 Where required by the authority having jurisdiction, the owner shall provide a copy of the inspection report and certification that the inspection required by 12.7.10.2 has been performed.

12.7.11 Maintenance and Operation of Folding and Telescopic Seating.
12.7.11.1 Instructions in both maintenance and operation shall be transmitted to the owner by the manufacturer of the seating or his or her representative.
12.7.11.2 Maintenance and operation of folding and telescopic seating shall be the responsibility of the owner or his or her duly authorized representative and shall include all of the following:
   (1) During operation of the folding and telescopic seats, the opening and closing shall be supervised by responsible personnel who shall ensure that the operation is in accordance with the manufacturer’s instructions.
   (2) Only attachments specifically approved by the manufacturer for the specific installation shall be attached to the seating.
   (3) An annual inspection and required maintenance of each grandstand shall be performed to ensure safe conditions.
   (4) At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.

12.7.12 Clothing. Clothing and personal effects shall not be stored in corridors, and spaces not separated from corridors, unless otherwise permitted by one of the following:
   (1) This requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7.
   (2) This requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by a smoke detection system in accordance with Section 9.6.
   (3) This requirement shall not apply to storage in metal lockers, provided that the required egress width is maintained.

12.7.13.1 Emergency plans  
12.7.13.2 Where assembly occupancies are located in the high-rise portion of a building, the emergency plan emergency action plan shall include egress procedures, methods, and preferred evacuation routes for each event considered to be a life safety hazard that could impact the building, including the appropriateness of the use of elevators.

Chapter 13 Existing Assembly Occupancies

13.1 General Requirements.
13.1.1 Application.
13.1.1.1 The requirements of this chapter shall apply to existing buildings or portions thereof currently occupied as assembly occupancies, unless otherwise specified by 13.1.1.4. (See 3.3.188.2 for definition of assembly occupancy.)
13.1.1.2 Administration. The provisions of Chapter 1, Administration, shall apply.
13.1.1.3 General. The provisions of Chapter 4, General, shall apply.
13.1.1.4 An existing building housing an assembly occupancy established prior to the effective date of this Code shall be permitted to be approved for continued use if it conforms to, or is made to conform to, the provisions of this Code to the extent that, in the opinion of the authority having jurisdiction, reasonable life safety against the hazards of fire, explosion, and panic is provided and maintained.
13.1.1.5 Additions to existing buildings shall conform to the requirements of 4.6.7.
13.1.1.6 Existing portions of buildings shall be upgraded if the addition results in an increase in the required minimum number of separate means of egress in accordance with 7.4.1.2.
13.1.1.7 Existing portions of the structure shall not be required to be modified, provided that both of the following criteria are met:
   (1) The new construction has not diminished the fire safety features of the facility.
   (2) The addition does not result in an increase in the required minimum number of separate means of egress in accordance with 7.4.1.2.
13.1.1.8 An assembly occupancy in which an occupant load increase results in an increase in the required minimum number of separate means of egress, in accordance with 7.4.1.2, shall meet the requirements for new construction.
13.1.2 Classification of Occupancy. See 6.1.2.
13.1.3 Multiple Occupancies.
13.1.3.1 General. Multiple occupancies shall be in accordance with 6.1.14.

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13.1.3.2 Atrium walls in accordance with 6.1.14.4.6 shall be permitted to serve as part of the separation required by 6.1.14.4.1 for creating separated occupancies on a story-by-story basis.
13.1.3.3 Simultaneous Occupancy. Exits shall be sufficient for simultaneous occupancy of both the assembly occupancy and other parts of the building, except where the authority having jurisdiction determines that the conditions are such that simultaneous occupancy will not occur.
13.1.3.4 Assembly and Mercantile Occupancies in Mall Buildings.
13.1.3.4.1 The provisions of Chapter 13 shall apply to the assembly occupancy tenant space.
13.1.3.4.2 The provisions of 37.4.4 shall be permitted to be used outside the assembly occupancy tenant space.
13.1.4 Definitions.
13.1.4.1 General. For definitions, see Chapter 3, Definitions.
13.1.4.2* Special Definitions. The following is a list of special terms used in this chapter:

1. Aisle Accessway. See 3.3.11. (See 3.3.11.)
2. Aisle Stair. A stair within a seating area of an assembly occupancy that directly serves rows of seats to the side of the stair, including transition stairs that connect to an aisle or a landing.

3. Exhibit. See 3.3.77.
4. Exhibitor. See 3.3.78. (See 3.3.78.)
5. Exposition. See 3.3.84. (See 3.3.84.)
6. Exposition Facility. See 3.3.88.1. (See 3.3.88.1.)
7. Festival Seating. See 3.3.237.1. (See 3.3.237.1.)
8. Flow Time. See 3.3.115. (See 3.3.115.)
9. Fly Gallery. See 3.3.116. (See 3.3.116.)
10. Gridiron. See 3.3.126. (See 3.3.126.)
11. Legitimate Stage. See 3.3.262.1. (See 3.3.262.1.)
12. Life Safety Evaluation. See 3.3.158. (See 3.3.158.)
13. Multilevel Play Structure. See 3.3.271.5. (See 3.3.271.5.)
14. Pinrail. See 3.3.208. (See 3.3.208.)
15. Platform. See 3.3.209. (See 3.3.209.)
16. Proscenium Wall. See 3.3.287.2. (See 3.3.287.2.)
17. Regular Stage. See 3.3.262.2. (See 3.3.262.2.)
18. Smoke-Protected Assembly Seating. See 3.3.237.4. (See 3.3.237.4.)
19. Special Amusement Building. See 3.3.36.10. (See 3.3.36.10.)
20. Stage. See 3.3.262. (See 3.3.262.)
21. Temporary Platform. See 3.3.209.1. (See 3.3.209.1.)

13.1.5 Classification of Hazard of Contents. Contents of assembly occupancies shall be classified in accordance with the provisions of Section 6.2.

13.1.6 Minimum Construction Requirements. Assembly occupancies shall be limited to the building construction types specified in Table 13.1.6, based on the number of stories in height as defined in 4.6.3, unless otherwise permitted by the following (see 8.2.1):

1. This requirement shall not apply to outdoor grandstands of Type I or Type II construction.
2. This requirement shall not apply to outdoor grandstands of Type III, Type IV, or Type V construction that meet the requirements of 13.4.8.
3. This requirement shall not apply to grandstands of noncombustible construction supported by the floor in a building meeting the construction requirements of Table 13.1.6.
4. This requirement shall not apply to assembly occupancies within mall buildings in accordance with 37.4.4.

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</table>

X: Permitted for assembly of any occupant load.
X1: Permitted for assembly of any occupant load, but limited to one story below the level of exit discharge.
X2: Permitted for assembly limited to an occupant load of 1000 or less, and limited to one story below the level of exit discharge.
X3: Permitted for assembly limited to an occupant load of 1000 or less.
X4: Permitted for assembly limited to an occupant load of 300 or less.
NP: Not permitted.

aProtected by an approved automatic sprinkler system in accordance with Section 9.7 in the following locations:
(1) Throughout the story of the assembly occupancy
(2) Throughout all stories intervening between the story of the assembly occupancy and the level of exit discharge
(3) Throughout the level of exit discharge if there are any openings between the level of exit discharge and the exits serving the assembly occupancy

bSee 4.6.3.

cWhere every part of the structural framework of roofs in Type I or Type II construction is 20 ft (6100 mm) or more above the floor immediately below, omission of all fire protection of the structural members is permitted, including protection of trusses, roof framing, decking, and portions of columns above 20 ft (6100 mm).
In open-air fixed seating facilities, including stadia, omission of fire protection of structural members exposed to the outside atmosphere is permitted where substantiated by an approved engineering analysis.

13.1.7 Occupant Load.

13.1.7.1* General. The occupant load, in number of persons for whom means of egress and other provisions are required, shall be determined on the basis of the occupant load factors of Table 7.3.1.2 that are characteristic of the use of the space or shall be determined as the maximum probable population of the space under consideration, whichever is greater.

13.1.7.1.1 In areas not in excess of 10,000 ft² (930 m²), the occupant load shall not exceed one person in 5 ft² (0.46 m²).

13.1.7.1.2 In areas in excess of 10,000 ft² (930 m²), the occupant load shall not exceed one person in 7 ft² (0.65 m²).

13.1.7.1.3 The authority having jurisdiction shall be permitted to establish the occupant load as the number of persons for which the existing means of egress is adequate, provided that measures are established to prevent occupancy by a greater number of persons.

13.1.7.2 Waiting Spaces. In theaters and other assembly occupancies where persons are admitted to the building at times when seats are not available, or when the permitted occupant load has been reached based on 13.1.7.1 and persons are allowed to wait in a lobby or similar space until seats or space is available, all of the following requirements shall apply:

1. Such use of a lobby or similar space shall not encroach upon the required clear width of exits.

2. The waiting spaces shall be restricted to areas other than the required means of egress.

3. Exits shall be provided for the waiting spaces on the basis of one person for each 3 ft² (0.28 m²) of waiting space area.

4. Exits for waiting spaces shall be in addition to the exits specified for the main auditorium area and shall conform in construction and arrangement to the general rules for exits given in this chapter.

13.1.7.3 Life Safety Evaluation. Where the occupant load of an assembly occupancy exceeds 6000, a life safety evaluation shall be performed in accordance with 13.4.1.

13.1.7.4 Outdoor Facilities. In outdoor facilities, where approved by the authority having jurisdiction, the number of occupants who are each provided with not less than 15 ft² (1.4 m²) of lawn surface shall be permitted to be excluded from the maximum occupant load of 6000 of 13.1.7.3 in determining the need for a life safety evaluation.

13.2 Means of Egress Requirements.

13.2.1 General. All means of egress shall be in accordance with Chapter 7 and this chapter.

13.2.2 Means of Egress Components.

13.2.2.1 Components Permitted. Components of means of egress shall be limited to the types described in 13.2.2.2 through 13.2.2.12.

13.2.2.2 Doors.

13.2.2.2.1 Doors complying with 7.2.1 shall be permitted.

13.2.2.2.2 Assembly occupancies with occupant loads of 300 or less in malls (see 37.4.4.2.2) shall be permitted to have horizontal or vertical security grilles or doors complying with 7.2.1.4.1(3) on the main entrance/exits.

13.2.2.2.3 Any door in a required means of egress from an area having an occupant load of 100 or more persons shall be permitted to be provided with a latch or lock only if the latch or lock is panic hardware or fire exit hardware complying with 7.2.1.7, unless otherwise permitted by one of the following:

1. This requirement shall not apply to delayed-egress locks as permitted in 13.2.2.5.

2. This requirement shall not apply to access-controlled egress doors as permitted in 13.2.2.6.
13.2.2.2.4 Locking devices complying with 7.2.1.5.5 shall be permitted to be used on a single door or a single pair of doors if both of the following conditions apply:
(1) The door or pair of doors serve as the main exit from assembly occupancies having an occupant load not greater than 600.
(2) Any latching devices on such a door(s) from an assembly occupancy having an occupant load of 100 or more are released by panic hardware or fire exit hardware.

13.2.2.2.5 Delayed-egress locks complying with 7.2.1.6.1 shall be permitted on doors other than main entrance/exit doors.

13.2.2.2.6 Doors in the means of egress shall be permitted to be equipped with an approved access control system complying with 7.2.1.6.2, and such doors shall not be locked from the egress side when the assembly occupancy is occupied. (See 7.2.1.1.3.)

13.2.2.2.7 Elevator lobby exit access door locking in accordance with 7.2.1.6.3 shall be permitted.

13.2.2.2.8 Revolving doors complying with the requirements of 7.2.1.10 for new construction shall be permitted.

13.2.2.2.9 The provisions of 7.2.1.11.1.1 to permit turnstiles where revolving doors are permitted shall not apply.

13.2.2.2.10 No turnstiles or other devices that restrict the movement of persons shall be installed in any assembly occupancy in such a manner as to interfere with required means of egress facilities.

13.2.2.3 Stairs.

13.2.2.3.1 General. Stairs complying with 7.2.2 shall be permitted, unless one of the following criteria applies:

(1) Stairs serving seating that is designed to be repositioned shall not be required to comply with 7.2.2.3.1.

(2) This requirement shall not apply to stages and platforms as permitted by 13.4.5.

(3) The stairs connecting only a stage or platform and the immediately adjacent assembly seating shall be permitted to have a handrail in the center only or on one side only.

(4) The stairs connecting only a stage or platform and the immediately adjacent assembly seating shall be permitted to omit the guards required by 7.1.8 where both of the following criteria are met:

(a) The guard would restrict audience sight lines to the stage or platform.

(b) The height between any part of the stair and the adjacent floor is not more than 42 in. (1065 mm).

13.2.2.3.2 Catwalk, Gallery, and Gridiron Stairs.

13.2.2.3.2.1 Noncombustible grated stair treads and landing floors shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

13.2.2.3.2.2 Spiral stairs complying with 7.2.2.3 shall be permitted in means of egress from lighting and access catwalks, galleries, and gridirons.

13.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 7.2.3 shall be permitted.

13.2.2.5 Horizontal Exits. Horizontal exits complying with 7.2.4 shall be permitted.

13.2.2.6 Ramps. Ramps complying with 7.2.5 shall be permitted.

13.2.2.7 Exit Passageways. Exit passageways complying with 7.2.6 shall be permitted.

13.2.2.8 Escalators and Moving Walks. Escalators and moving walks complying with 7.2.7 shall be permitted.

13.2.2.9 Fire Escape Stairs. Fire escape stairs complying with 7.2.8 shall be permitted.

13.2.2.10 Fire Escape Ladders.

13.2.2.10.1 Fire escape ladders complying with 7.2.9 shall be permitted.

13.2.2.10.2 For ladders serving catwalks, the three-person limitation in 7.2.9.1(3) shall be permitted to be increased to ten persons.
13.2.2.11 **Alternating Tread Devices.** Alternating tread devices complying with 7.2.11 shall be permitted.

13.2.2.12 **Areas of Refuge.** Areas of refuge complying with 7.2.12 shall be permitted.

13.2.3 **Capacity of Means of Egress.**

13.2.3.1 **General.** The capacity of means of egress shall be in accordance with one of the following:

1. Section 7.3 for other than theater-type seating or smoke-protected assembly seating
2. 13.2.3.2 for rooms with theater-type seating or similar seating arranged in rows
3. 13.4.2 for smoke-protected assembly seating

13.2.3.2* **Theater-Type Seating.** Minimum clear widths of aisles and other means of egress serving theater-type seating, or similar seating arranged in rows, shall be in accordance with Table 13.2.3.2.

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13.2.3.3 **Width Modifications.** The minimum clear widths shown in Table 13.2.3.2 shall be modified in accordance with all of the following:

1. If risers exceed 7 in. in height, the stair width in Table 13.2.3.2 shall be multiplied by factor $A$, where $A$ equals the following:

$$ A = 1 + \frac{\text{riser height} - 7}{5} $$

2. If risers exceed 178 mm in height, the stair width in Table 13.2.3.2 shall be multiplied by factor $A$, where $A$ equals the following:

$$ A = 1 + \frac{\text{riser height} - 178}{125} $$

3. Stairs not having a handrail within a 30 in. (760 mm) horizontal distance shall be 25 percent wider than otherwise calculated; that is, their width shall be multiplied by factor $B$, where $B$ equals the following:

$$ B = 1.25 $$

4. Ramps steeper than 1 in 10 slope where used in ascent shall have their width increased by 10 percent; that is, their width shall be multiplied by factor $C$, where $C$ equals the following:

$$ C = 1.10 $$

13.2.3.4 **Lighting and Access Catwalks.** The requirements of 13.2.3.2 and 13.2.3.3 shall not apply to lighting and access catwalks as permitted by 13.4.5.9.

13.2.3.5 **Bleachers Aisles.** In seating composed entirely of bleachers for which the row-to-row dimension is 28 in. (710 mm) or less, and from which front egress is not limited, aisles shall not be required to exceed 66 in. (1675 mm) in width.

13.2.3.6 **Main Entrance/Exit.**

13.2.3.6.1 Every assembly occupancy shall be provided with a main entrance/exit.

13.2.3.6.2 The main entrance/exit shall be of a width that accommodates one-half of the total occupant load.

13.2.3.6.3 The main entrance/exit shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street.

13.2.3.6.4 **Reserved.**
13.2.3.6.5 Where the main entrance/exit from an assembly occupancy is through a lobby or foyer, the aggregate capacity of all exits from the lobby or foyer shall be permitted to provide the required capacity of the main entrance/exit, regardless of whether all such exits serve as entrances to the building.

13.2.3.6.6* In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width needed to accommodate the permitted occupant load.

13.2.3.7 Other Exits. Each level of an assembly occupancy shall have access to the main entrance/exit and shall be provided with additional exits of a width to accommodate not less than one-half of the total occupant load served by that level.

13.2.3.7.1 Additional exits shall discharge in accordance with 13.2.7.

13.2.3.7.2 Additional exits shall be located as far apart as practicable and as far from the main entrance/exit as practicable.

13.2.3.7.3 Additional exits shall be accessible from a cross aisle or a side aisle.

13.2.3.7.4 In assembly occupancies where there is no well-defined main entrance/exit, exits shall be permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width required to accommodate the permitted occupant load.

13.2.4* Number of Means of Egress.

13.2.4.1 The number of means of egress shall be in accordance with Section 7.4, other than fenced outdoor assembly occupancies in accordance with 13.2.4.4, unless otherwise permitted by 13.2.4.2 or 13.2.4.3.

13.2.4.2 Assembly occupancies with occupant loads of 600 or fewer shall have two separate means of egress.

13.2.4.3 Assembly occupancies with occupant loads greater than 600 but fewer than 1000 shall have three separate means of egress.

13.2.4.4 A fenced outdoor assembly occupancy shall have not less than two widely separated means of egress from the enclosure, unless otherwise required by one of the following:

(1) If more than 6000 persons are to be served by such means of egress, there shall be not less than three means of egress.

(2) If more than 9000 persons are to be served by such means of egress, there shall be not less than four means of egress.

13.2.4.5 Balconies or mezzanines having an occupant load not exceeding 50 shall be permitted to be served by a single means of egress, and such means of egress shall be permitted to lead to the floor below.

13.2.4.6 Balconies or mezzanines having an occupant load exceeding 50, but not exceeding 100, shall have not less than two remote means of egress, but both such means of egress shall be permitted to lead to the floor below.

13.2.4.7 Balconies or mezzanines having an occupant load exceeding 100 shall have means of egress as described in 7.4.1.

13.2.4.8 A second means of egress shall not be required from lighting and access catwalks, galleries, and gridirons where a means of escape to a floor or a roof is provided. Ladders, alternating tread devices, or spiral stairs shall be permitted in such means of escape.

13.2.5 Arrangement of Means of Egress.

13.2.5.1 General.

13.2.5.1.1 Means of egress shall be arranged in accordance with Section 7.5.
13.2.5.1.2 A common path of travel shall be permitted for the first 20 ft (6100 mm) from any point where the common path serves any number of occupants, and for the first 75 ft (23 m) from any point where the common path serves not more than 50 occupants.
13.2.5.1.3 Dead-end corridors shall not exceed 20 ft (6100 mm).
13.2.5.2 Access Through Hazardous Areas. Means of egress shall not be permitted through kitchens, storerooms, restrooms, closets, platforms, stages, or hazardous areas as described in 13.3.2.
13.2.5.3 Reserved.
13.2.5.4 General Requirements for Access and Egress Routes Within Assembly Areas.
13.2.5.4.1 Festival seating, as defined in 3.3.237.1, shall be prohibited within a building, unless otherwise permitted by one of the following:
(1) Festival seating shall be permitted in assembly occupancies having occupant loads of 250 or less.
(2) Festival seating shall be permitted in assembly occupancies where occupant loads exceed 250, provided that an approved life safety evaluation has been performed. (See 13.4.1.)
13.2.5.4.2 Access and egress routes shall be maintained so that any individual is able to move without undue hindrance, on personal initiative and at any time, from an occupied position to the exits.
13.2.5.4.3 Access and egress routes shall be maintained so that crowd management, security, and emergency medical personnel are able to reach any individual at any time, without undue hindrance.
13.2.5.4.4 The width of aisle accessways and aisles shall provide sufficient egress capacity for the number of persons accommodated by the catchment area served by the aisle accessway or aisle in accordance with 13.2.3.2, or for smoke-protected assembly seating in accordance with 13.4.2.
13.2.5.4.5 Where aisle accessways or aisles converge to form a single path of egress travel, the required egress capacity of that path shall be not less than the combined required capacity of the converging aisle accessways and aisles.
13.2.5.4.6 Those portions of aisle accessways and aisles where egress is possible in either of two directions shall be uniform in required width, unless otherwise permitted by 13.2.5.4.7.
13.2.5.4.7 The requirement of 13.2.5.4.6 shall not apply to those portions of aisle accessways where the required width, not including the seat space described by 13.2.5.7.3, does not exceed 12 in. (305 mm).
13.2.5.4.8 In the case of side boundaries for aisle accessways or aisles, other than those for nonfixed seating at tables, the clear width shall be measured to boundary elements such as walls, guardrails, handrails, edges of seating, tables, and side edges of treads, and said measurement shall be made horizontally to the vertical projection of the elements, resulting in the smallest width measured perpendicularly to the line of travel.
13.2.5.5 Aisle Accessways Serving Seating Not at Tables.
13.2.5.5.1 The required clear width of aisle accesses between rows of seating shall be determined as follows:
(1) Horizontal measurements shall be made, between vertical planes, from the back of one seat to the front of the most forward projection of the seat immediately behind it.
(2) Where the entire row consists of automatic- or self-rising seats that comply with ASTM F 851, *Standard Test Method for Self-Rising Seat Mechanisms*, the measurement shall be permitted to be made with the seats in the up position.
13.2.5.5.2 The aisle accessway between rows of seating shall have a clear width of not less than 12 in. (305 mm), and this minimum shall be increased as a function of row length in accordance with 13.2.5.5.4, 13.2.5.5.5, and 13.2.5.5.6.

13.2.5.5.3 If used by not more than four persons, no minimum clear width shall be required for the portion of an aisle accessway having a length not exceeding 6 ft (1830 mm), measured from the center of the seat farthest from the aisle.

13.2.5.5.4 The increase in aisle accessway width required by 13.2.5.5.2 shall not apply to grandstands, bleachers, and folding and telescopic seating, provided that the number of seats between the farthest seat and an aisle does not exceed that shown in Table 13.4.8.2.5.

13.2.5.5.5 Rows of seating served by aisles or doorways at both ends shall not exceed 100 seats per row.

13.2.5.5.6 Rows of seating served by an aisle or doorway at one end only shall have a path of travel not exceeding 30 ft (9.1 m) in length from any seat to an aisle.

13.2.5.5.7 The depth of seat boards shall be not less than 9 in. (230 mm) where the same level is not used for both seat boards and footboards.

13.2.5.5.8 Footboards, independent of seats, shall be provided so that there is no horizontal opening that allows the passage of a ½ in. (13 mm) diameter sphere.

13.2.5.6 Aisles Serving Seating Not at Tables.

13.2.5.6.1 General.

13.2.5.6.1.1 Aisles shall be provided so that the number of seats served by the nearest aisle is in accordance with 13.2.5.5.2 through 13.2.5.5.5, unless otherwise permitted by 13.2.5.6.1.2.

13.2.5.6.1.2 Aisles shall not be required in bleachers, provided that all of the following conditions are met:

1. Egress from the front row shall not be obstructed by a rail, a guard, or other obstruction.
2. The row spacing shall be 28 in. (710 mm) or less.
3. The rise per row, including the first row, shall be 6 in. (150 mm) or less.
4. The number of rows shall not exceed 16.
5. The seat spaces shall not be physically defined.
6. Seat boards that are also used as stepping surfaces for descent shall provide a walking surface with a width of not less than 12 in. (305 mm), and, where a depressed footboard exists, the gap between seat boards of adjacent rows shall not exceed 12 in. (305 mm), measured horizontally.
7. The leading edges of seat boards used as stepping surfaces shall be provided with a contrasting marking stripe so that the location of the leading edge is readily apparent, particularly when viewed in descent, and the following shall also apply:
   a. The marking stripe shall be not less than 1 in. (25 mm) wide and shall not exceed 2 in. (51 mm) in width.
   b. The marking stripe shall not be required where bleacher surfaces and environmental conditions, under all conditions of use, are such that the location of each leading edge is readily apparent, particularly when viewed in descent.

13.2.5.6.2 Dead-End Aisles. Dead-end aisles shall not exceed 20 ft (6100 mm) in length, unless otherwise permitted by one of the following:
(1) A dead-end aisle shall be permitted to exceed 20 ft (6100 mm) in length where seats served by the dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a clear width of not less than 12 in. (305 mm) plus 0.6 in. (15 mm) for each additional seat over a total of 7 in the row.

(2) A 16-row, dead-end aisle shall be permitted in folding and telescopic seating and grandstands.

(3) Aisle termination in accordance with 13.4.2.11 for smoke-protected assembly seating shall be permitted.

(4) Bleacher aisles in accordance with 13.2.3.5 shall not be considered as dead-end aisles.

**13.2.5.6.3** Minimum Aisle Width. The minimum clear width of aisles shall be sufficient to provide egress capacity in accordance with 13.2.3.1 but shall be not less than the following:

(1) 42 in. (1065 mm) for stairs having seating on each side, except that the minimum clear width shall be permitted to be not less than 30 in. (760 mm) for catchment areas having not more than 60 seats.

(2) 36 in. (915 mm) for stairs having seating on only one side, or 30 in. (760 mm) for catchment areas having not more than 60 seats.

(3) 20 in. (510 mm) between a handrail and seating or between a guardrail and seating where the aisle is subdivided by a handrail.

(4) 42 in. (1065 mm) for level or ramped aisles having seating on both sides, except that the minimum clear width shall be not less than 30 in. (760 mm) for catchment areas having not more than 60 seats.

(5) 36 in. (915 mm) for level or ramped aisles having seating on only one side, or 30 in. (760 mm) for catchment areas having not more than 60 seats.

(6) 23 in. (585 mm) between a handrail or a guardrail and seating where the aisle does not serve more than five rows on one side.

**13.2.5.6.4** Aisle Stairs and Aisle Ramps.

13.2.5.6.4.1** The following shall apply to aisle stairs and aisle ramps:

(1) Aisles having a gradient steeper than 1 in 20, but not steeper than 1 in 8, shall consist of an aisle ramp.

(2) Aisles having a gradient steeper than 1 in 8 shall consist of an aisle stair.

13.2.5.6.4.2** Transitions in aisle stairs shall comply with the following:

(1) Aisle terminations shall not be required to exceed 14 in. (355 mm) in the direction of travel.

(2) Where a transition occurs between two aisle stairs with the same tread depth, the transition shall not be required to exceed 30 in. (760 mm) in the direction of travel.

(3) Where a transition occurs between an aisle stair to another aisle stair with deeper treads in a straight run in the descending direction, the transition shall not be required to exceed 22 in. (560 mm) in the direction of travel.

(4) Where a transition occurs between an aisle stair to another aisle stair with narrower treads in a straight run in the descending direction, the transition shall not be required to exceed 30 in. (760 mm) in the direction of travel.

(5) Steps in aisle transitions around a vomitory shall be permitted.

(6) The leading edge of treads adjacent to transitions shall be indicated by a distinctive marking stripe.
13.2.5.6.4.2 13.2.5.6.4.3 The limitation on height between landings in Table 7.2.2.2.1.1(a) and Table 7.2.2.2.1.1(b) shall not apply to aisle stairs and landings.

13.2.5.6.4.3 The limitation on height between landings in Table 7.2.5.2(a) and Table 7.2.5.2(b) shall not apply to aisle ramps and landings.

13.2.5.6.5 Aisle Stair Treads. Aisle stair treads shall meet all of the following criteria:

(1) There shall be no variation in the depth of adjacent treads that exceeds $\frac{3}{16}$ in. (4.8 mm), unless otherwise permitted by 13.2.5.6.5(2), (5), or (6).

(2) Construction-caused nonuniformities in tread depth shall be permitted, provided that both of the following criteria are met:

(a) The nonuniformity does not exceed $\frac{3}{8}$ in. (10 mm).

(b) The aisle tread depth is 22 in. (560 mm) or greater.

(3)* Tread depth shall be not less than 11 in. (280 mm).

(4) All treads shall extend the full width of the aisle.

(5)* In aisle stairs where a single intermediate tread is provided halfway between seating platforms, such intermediate treads shall be permitted to be of a relatively smaller but uniform depth but shall be not less than 13 in. (330 mm).

(6) All of the following shall apply to grandstands, bleachers, and folding and telescopic seating:

(a) Steps shall not be required to be provided in aisles to overcome differences in level unless the gradient exceeds 1 unit of rise in 10 units of run.

(b) Where the rise of the seating platform exceeds 11 in. (280 mm), an intermediate step shall be provided for the full width of the aisle and shall be proportioned to provide two steps of equal rise per platform.

(c) Where the rise of the seating platform exceeds 18 in. (455 mm), two intermediate steps for the full width of the aisle shall be provided and proportioned to provide three steps of equal rise per platform that are uniform and not less than 9 in. (230 mm).

(d) The full length of the nose of each step in the aisle, as required by 13.2.5.6.5(6)(c), shall be conspicuously marked.

13.2.5.6.6 Aisle Stair Risers. Aisle stair risers shall meet the following criteria:

(1) Riser heights shall be not less than 4 in. (100 mm) in aisle stairs, unless aisle stairs are those in folding and telescopic seating.

(2) The riser height of aisle stairs in folding and telescopic seating shall be permitted to be not less than 3½ in. (90 mm).

(3) Riser heights shall not exceed 8 in. (205 mm), unless otherwise permitted by 13.2.5.6.6(4) or (5).

(4) The riser height of aisle stairs in folding and telescopic seating shall be permitted to be not more than 11 in. (280 mm).

(5) Where the gradient of an aisle is steeper than 8 in. (205 mm) in rise in 11 in. (280 mm) of run for the purpose of maintaining necessary sight lines in the adjoining seating area, the riser height shall be permitted to exceed 8 in. (205 mm) but shall not exceed 11 in. (280 mm).

(6) Riser heights shall be designed to be uniform in each aisle, and the construction-caused nonuniformities shall not exceed $\frac{3}{16}$ in. (4.8 mm) between adjacent risers, unless the conditions of 13.2.5.6.6(7) or (8) are met.

(7) Riser height shall be permitted to be nonuniform where both of the following criteria are met:
(a) The uniformity shall be only for the purpose of accommodating changes in gradient necessary to maintain sight lines within a seating area, in which case the riser height shall be permitted to exceed $\frac{3}{16}$ in. (4.8 mm) in any flight.

(b) Where nonuniformities exceed $\frac{3}{16}$ in. (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated by a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers.

(8) Construction-caused nonuniformities in riser height shall be permitted to exceed $\frac{3}{16}$ in. (4.8 mm) where all of the following criteria are met:

(a) The riser height shall be designed to be nonuniform.

(b) The construction-caused nonuniformities shall not exceed $\frac{3}{8}$ in. (10 mm) where the aisle tread depth is less than 22 in. (560 mm).

(c) The construction-caused nonuniformities shall not exceed $\frac{3}{4}$ in. (19 mm) where the aisle tread depth is 22 in. (560 mm) or greater.

(d) Where nonuniformities exceed $\frac{3}{16}$ in. (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated by a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers.

13.2.5.6.7 Aisle Stair Profile. Aisle stairs shall comply with all of the following:

(1) Aisle risers shall be vertical or sloped under the tread projection at an angle not to exceed 30 degrees from vertical.

(2) Tread projection not exceeding 1½ in. (38 mm) shall be permitted.

(3) Tread projection shall be uniform in each aisle, except as otherwise permitted by 13.2.5.6.7(4).

(4) Construction-caused projection nonuniformities not exceeding $\frac{1}{4}$ in. (6.4 mm) shall be permitted.

13.2.5.6.8* Aisle Handrails.

13.2.5.6.8.1 Aisle transition stairs shall comply with the following:

(1) Aisle transition stairs without seating at either side shall be provided with a handrail on both sides of the aisle.

(2) Where an aisle stair leading to the aisle transition stair includes a center handrail, a center handrail shall also be provided on the aisle transition stair.

13.2.5.6.8.2 13.2.5.6.8.1 Ramped aisles having a gradient exceeding 1 in 12 and aisle stairs shall be provided with handrails at one side or along the centerline and shall also be in accordance with 7.2.2.4.4.1, 7.2.2.4.4.5, and 7.2.2.4.4.6.

13.2.5.6.8.23 Where seating exists on both sides of the aisle, the handrails shall be noncontinuous with gaps or breaks at intervals not exceeding five rows to facilitate access to seating and to allow crossing from one side of the aisle to the other.

13.2.5.6.8.34 The gaps or breaks permitted by 13.2.5.6.8.2 shall have a clear width of not less than 22 in. (560 mm) and shall not exceed 36 in. (915 mm), measured horizontally, and the handrail shall have rounded terminations or bends.

13.2.5.6.8.45 Where handrails are provided in the middle of aisle stairs, an additional intermediate rail shall be located approximately 12 in. (305 mm) below the main handrail.

13.2.5.6.8.56 Handrails shall not be required where otherwise permitted by one of the following:

(1) Handrails shall not be required for ramped aisles having a gradient not steeper than 1 in 8 and having seating on both sides.
The requirement for a handrail shall be satisfied by the use of a guard provided with a rail that complies with the graspability requirements for handrails and is located at a consistent height between 34 in. and 42 in. (865 mm and 1065 mm), measured as follows:

(a) Vertically from the top of the rail to the leading edge (nosing) of stair treads
(b) Vertically from the top of the rail to the adjacent walking surface in the case of a ramp

Handrails shall not be required where risers do not exceed 7 in. (180 mm) in height.

13.2.5.6.9* Aisle Marking.

13.2.5.6.9.1 A contrasting marking stripe shall be provided on each tread at the nosing or leading edge so that the location of such tread is readily apparent, particularly when viewed in descent.

13.2.5.6.9.2 The marking stripe shall be not less than 1 in. (25 mm) wide and shall not exceed 2 in. (51 mm) in width.

13.2.5.6.9.3 The marking stripe shall not be required where tread surfaces and environmental conditions, under all conditions of use, are such that the location of each tread is readily apparent, particularly when viewed in descent.

13.2.5.7* Aisle Accessways Serving Seating at Tables.

13.2.5.7.1 The required clear width of an aisle accessway shall be not less than 12 in. (305 mm) where measured in accordance with 13.2.5.7.3 and shall be increased as a function of length in accordance with 13.2.5.7.4, unless otherwise permitted by 13.2.5.7.2.

13.2.5.7.2* If used by not more than four persons, no minimum clear width shall be required for the portion of an aisle accessway having a length not exceeding 6 ft (1830 mm) and located farthest from an aisle.

13.2.5.7.3* Where nonfixed seating is located between a table and an aisle accessway or aisle, the measurement of required clear width of the aisle accessway or aisle shall be made to a line 19 in. (485 mm), measured perpendicularly to the edge of the table, away from the edge of said table.

13.2.5.7.4* The minimum required clear width of an aisle accessway, measured in accordance with 13.2.5.4.8 and 13.2.5.7.3, shall be increased beyond the 12 in. (305 mm) requirement of 13.2.5.7.1 by ½ in. (13 mm) for each additional 12 in. (305 mm) or fraction thereof beyond 12 ft (3660 mm) of aisle accessway length, where measured from the center of the seat farthest from an aisle.

13.2.5.7.5 The path of travel along the aisle accessway shall not exceed 36 ft (11 m) from any seat to the closest aisle or egress doorway.

13.2.5.8 Aisles Serving Seating at Tables.

13.2.5.8.1* Aisles that contain steps or that are ramped, such as aisles serving dinner theater–style configurations, shall comply with 13.2.5.6.

13.2.5.8.2* The width of aisles serving seating at tables shall be not less than 44 in. (1120 mm) where serving an occupant load exceeding 50, and 36 in. (915 mm) where serving an occupant load of 50 or fewer.

13.2.5.8.3* Where nonfixed seating is located between a table and an aisle, the measurement of required clear width of the aisle shall be made to a line 19 in. (485 mm), measured perpendicularly to the edge of the table, away from the edge of said table.

13.2.5.9 Approval of Layouts.

13.2.5.9.1 Where required by the authority having jurisdiction, plans drawn to scale showing the arrangement of furnishings or equipment shall be submitted to the authority by the building owner, manager, or authorized agent to substantiate conformance with the provisions of 13.2.5.

13.2.5.9.2 The layout plans shall constitute the only acceptable arrangement, unless one of the following criteria is met:

1. The plans are revised.
2. Additional plans are submitted and approved.
(3) Temporary deviations from the specifications of the approved plans are used, provided that the occupant load is not increased and the intent of 13.2.5.9 is maintained.

13.2.6 Travel Distance to Exits.
13.2.6.1 Travel distance shall be measured in accordance with Section 7.6.
13.2.6.2 Exits shall be arranged so that the total length of travel from any point to reach an exit shall not exceed 200 ft (61 m) in any assembly occupancy, unless otherwise permitted by one of the following:
(1) The travel distance shall not exceed 250 ft (76 m) in assembly occupancies protected throughout by an approved automatic sprinkler system in accordance with Section 9.7.
(2) The travel distance requirement shall not apply to smoke-protected assembly seating as permitted by 13.4.2.12, 13.4.2.13, and 13.4.2.14.

13.2.7 Discharge from Exits.
13.2.7.1 Exit discharge shall comply with Section 7.7.
13.2.7.2 The level of exit discharge shall be measured at the point of principal entrance to the building.
13.2.7.3 Where the principal entrance to an assembly occupancy is via a terrace, either raised or depressed, such terrace shall be permitted to be considered to be the first story in height for the purposes of Table 13.1.6 where all of the following criteria are met:
(1) The terrace is at least as long, measured parallel to the building, as the total width of the exit(s) it serves but not less than 60 in. (1525 mm) long.
(2) The terrace is at least as wide, measured perpendicularly to the building, as the exit(s) it serves but not less than 60 in. (1525 mm) wide.
(3) Required stairs leading from the terrace to the finished ground level are protected in accordance with 7.2.2.6.3 or are not less than 10 ft (3050 mm) from the building.

13.2.8 Illumination of Means of Egress. Means of egress, other than for private party tents not exceeding 1200 ft² (112 m²), shall be illuminated in accordance with Section 7.8.

13.2.9 Emergency Lighting.
13.2.9.1 Emergency lighting, other than that permitted by 13.2.9.3, shall be provided in accordance with Section 7.9.
13.2.9.2 Private party tents not exceeding 1200 ft² (112 m²) shall not be required to have emergency lighting.
13.2.9.3 Assembly occupancies with an occupant load not exceeding 300 and used exclusively for a place of worship shall not be required to have emergency lighting.

13.2.10 Marking of Means of Egress.
13.2.10.1 Means of egress shall be provided with signs in accordance with Section 7.10.
13.2.10.2 Exit markings shall not be required on the seating side of vomitories from seating areas where exit marking is provided in the concourse and where such marking is readily apparent from the vomitories.
13.2.10.3 Evacuation diagrams in accordance with 7.10.8.5 shall be provided.

13.2.11 Special Means of Egress Features.
13.2.11.1 Guards and Railings: Boxes, Balconies, and Galleries. Boxes, balconies, and galleries shall meet the following criteria:
(1) The fasciae of boxes, balconies, and galleries shall rise not less than 26 in. (660 mm) above the adjacent floor or shall have substantial railings not less than 26 in. (660 mm) above the adjacent floor.
(2) The height of the rail above footrests on the adjacent floor immediately in front of a row of seats shall be not less than 26 in. (660 mm), and the following also shall apply:
(a) Railings at the ends of aisles shall be not less than 36 in. (915 mm) high for the full width of the aisle.
(b) Railings at the end of aisles shall be not less than 36 in. (915 mm) high at the ends of aisles where steps occur.
(3) Aisle accessways adjacent to orchestra pits and vomitories, and all cross aisles, shall be provided with railings not less than 26 in. (660 mm) above the adjacent floor.
(4) The requirement of 13.2.11.1(3) shall not apply where the backs of seats located at the front of the aisle project 24 in. (610 mm) or more above the adjacent floor of the aisle.
(5) Guardrails shall not be required on the audience side of stages, raised platforms, and other raised floor areas such as runways, ramps, and side stages used for entertainment or presentations.
(6) Permanent guardrails shall not be required at vertical openings in the performance area of stages.
(7) Guardrails shall not be required where the side of an elevated walking surface is required to be open for the normal functioning of special lighting or for access and use of other special equipment.

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(8) Where a guard is ordinarily required but not provided in accordance with 13.2.11.1(5) or (6), a written plan shall be developed and maintained to mitigate the fall hazards of unguarded raised floor areas and vertical openings on stages.

13.2.11.2 Lockups. Lockups in assembly occupancies, other than approved existing lockups, shall comply with the requirements of 23.4.5.

13.3 Protection.

13.3.1 Protection of Vertical Openings. Any vertical opening shall be enclosed or protected in accordance with Section 8.6, unless otherwise permitted by one of the following:

(1) Stairs or ramps shall be permitted to be unenclosed between balconies or mezzanines and main assembly areas located below, provided that the balcony or mezzanine is open to the main assembly area.
(2) Exit access stairs from lighting and access catwalks, galleries, and gridirons shall not be required to be enclosed.
(3) Assembly occupancies protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 shall be permitted to have unprotected vertical openings between any two adjacent floors, provided that such openings are separated from unprotected vertical openings serving other floors by a barrier complying with 8.6.5.
(4) Assembly occupancies protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 shall be permitted to have convenience stair openings in accordance with 8.6.9.2.
(5) Use of the following alternative materials shall be permitted where assemblies constructed of such materials are in good repair and free of any condition that would diminish their original fire resistance characteristics:

(a) Existing wood lath and plaster
(b) Existing ½ in. (13 mm) gypsum wallboard
(c) Existing installations of ¼ in. (6.3 mm) thick wired glass that are, or are rendered, inoperative and fixed in the closed position
(d) Other existing materials having similar fire resistance capabilities

13.3.2 Protection from Hazards.

13.3.2.1 Service Equipment, Hazardous Operations or Processes, and Storage Facilities.
13.3.2.1.1 Rooms containing high-pressure boilers, refrigerating machinery of other than the
domestic refrigerator type, large transformers, or other service equipment subject to explosion shall
meet both of the following requirements:
(1) Such rooms shall not be located directly under or abutting required exits.
(2) Such rooms shall be separated from other parts of the building by fire barriers in accordance
with Section 8.3 that have a minimum 1-hour fire resistance rating or shall be protected by automatic
extinguishing systems in accordance with Section 8.7.
13.3.2.1.2 Rooms or spaces for the storage, processing, or use of materials specified in
13.3.2.1.2(1) through (3) shall be protected in accordance with the following:
(1) Separation from the remainder of the building by fire barriers having a minimum 1-hour fire
resistance rating or protection of such rooms by automatic extinguishing systems as specified in
Section 8.7 in the following areas:
(a) Boiler and furnace rooms, unless otherwise protected by one of the following:
   i. The requirement of 13.3.2.1.2(1)(a) shall not apply to rooms enclosing furnaces, heating and
      air-handling equipment, or compressor equipment with a total aggregate input rating less than
      200,000 Btu (211 MJ), provided that such rooms are not used for storage.
   ii. The requirement of 13.3.2.1.2(1)(a) shall not apply to attic locations of the rooms addressed in
      13.3.2.1.2(1)(a), provided that such rooms comply with the draftstopping requirements of 8.6.11.
(b) Rooms or spaces used for the storage of combustible supplies in quantities deemed
    hazardous by the authority having jurisdiction
(c) Rooms or spaces used for the storage of hazardous materials or flammable or combustible
    liquids in quantities deemed hazardous by recognized standards
(2) Separation from the remainder of the building by fire barriers having a minimum 1-hour fire
resistance rating and protection of such rooms by automatic extinguishing systems as specified in
Section 8.7 in the following areas:
(a) Laundries
(b) Maintenance shops, including woodworking and painting areas
(c) Rooms or spaces used for processing or use of combustible supplies deemed hazardous by
    the authority having jurisdiction
(d) Rooms or spaces used for processing or use of hazardous materials or flammable or
    combustible liquids in quantities deemed hazardous by recognized standards
(3) Protection as permitted in accordance with 9.7.1.2 where automatic extinguishing is used to
    meet the requirements of 13.3.2.1.2(1) or (2)
13.3.2.2 Cooking Equipment. Cooking equipment shall be protected in accordance with 9.2.3,
unless the cooking equipment is one of the following types:
(1) Outdoor equipment
(2) Portable equipment not flue-connected
(3) Equipment used only for food warming

13.3.2.3 Alcohol-based hand-rub dispensers in accordance with 8.7.3.3 shall be permitted.

13.3 Interior Finish.
13.3.1 General. Interior finish shall be in accordance with Section 10.2.
13.3.2 Corridors, Lobbies, and Enclosed Stairways. Interior wall and ceiling finish materials
complying with Section 10.2 shall be Class A or Class B in all corridors and lobbies and shall be
Class A in enclosed stairways.
13.3.3.3 Assembly Areas. Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A or Class B in general assembly areas having occupant loads of more than 300 and shall be Class A, Class B, or Class C in assembly areas having occupant loads of 300 or fewer.

13.3.3.4 Screens. Screens on which pictures are projected shall comply with requirements of Class A or Class B interior finish in accordance with Section 10.2.

13.3.3.5 Interior Floor Finish. (No requirements.)

13.3.4 Detection, Alarm, and Communications Systems.

13.3.4.1 General.

13.3.4.1.1 Assembly occupancies with occupant loads of more than 300 and all theaters with more than one audience-viewing room shall be provided with an approved fire alarm system in accordance with 9.6.1 and 13.3.4, unless otherwise permitted by 13.3.4.1.2, 13.3.4.1.3, or 13.3.4.1.4.

13.3.4.1.2 Assembly occupancies that are a part of a multiple occupancy protected as a mixed occupancy (see 6.1.14) shall be permitted to be served by a common fire alarm system, provided that the individual requirements of each occupancy are met.

13.3.4.1.3 Voice communication or public address systems complying with 13.3.4.3.6 shall not be required to comply with 9.6.1.

13.3.4.1.4 The requirement of 13.3.4.1.1 shall not apply to assembly occupancies where, in the judgment of the authority having jurisdiction, adequate alternative provisions exist or are provided for the discovery of a fire and for alerting the occupants promptly.

13.3.4.2 Initiation.

13.3.4.2.1 Initiation of the required fire alarm system shall be by both of the following means, and the system shall be provided with an emergency power source:

(1) Manual means in accordance with 9.6.2.1(1), unless otherwise permitted by one of the following:

(a) The requirement of 13.3.4.2.1(1) shall not apply where initiation is by means of an approved automatic fire detection system in accordance with 9.6.2.1(2) that provides fire detection throughout the building.

(b) The requirement of 13.3.4.2.1(1) shall not apply where initiation is by means of an approved automatic sprinkler system in accordance with 9.6.2.1(3) that provides fire detection and protection throughout the building.

(2) Where automatic sprinklers are provided, initiation of the fire alarm system by sprinkler system waterflow, even where manual fire alarm boxes are provided in accordance with 13.3.4.2.1(1)

13.3.4.2.2 The initiating device shall be capable of transmitting an alarm to a receiving station, located within the building, that is constantly attended when the assembly occupancy is occupied.

13.3.4.2.3* In assembly occupancies with occupant loads of more than 300, automatic detection shall be provided in all hazardous areas that are not normally occupied, unless such areas are protected throughout by an approved automatic sprinkler system in accordance with Section 9.7.

13.3.4.3 Notification. The required fire alarm system shall activate an audible alarm in a constantly attended receiving station within the building when occupied for purposes of initiating emergency action.

13.3.4.3.1 Positive alarm sequence in accordance with 9.6.3.4 shall be permitted.

13.3.4.3.2 A presignal system in accordance with 9.6.3.3 shall be permitted.

13.3.4.3.3 Occupant notification shall be by means of voice announcements in accordance with 9.6.3.9 initiated by the person in the constantly attended receiving station.

13.3.4.3.4 Reserved.

13.3.4.3.5 Reserved.

13.3.4.3.6 The announcement shall be permitted to be made via a voice communication or public address system in accordance with 9.6.3.9.2.
13.3.4.3.7 Where the authority having jurisdiction determines that a constantly attended receiving station is impractical, automatically transmitted evacuation or relocation instructions shall be provided in accordance with NFPA 72, National Fire Alarm and Signaling Code.

13.3.5 Extinguishment Requirements. See also 13.1.6, 13.2.6, and 13.3.2.

13.3.5.1 Where the occupant load exceeds 100, the following assembly occupancies shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 9.7.1.1(1):

1. Dance halls
2. Discotheques
3. Nightclubs
4. Assembly occupancies with festival seating

13.3.5.2 Any assembly occupancy used or capable of being used for exhibition or display purposes shall be protected throughout by an approved automatic sprinkler system in accordance with Section 9.7 where the exhibition or display area exceeds 15,000 ft² (1400 m²).

13.3.5.3 The sprinklers specified by 13.3.5.2 shall not be required where otherwise permitted in the following locations:

1. Locations in stadia and arenas as follows:
   a. Over the floor areas used for contest, performance, or entertainment
   b. Over the seating areas
   c. Over open-air concourses where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading

2. Locations in unenclosed stadia and arenas as follows:
   a. Press boxes of less than 1000 ft² (93 m²)
   b. Storage facilities of less than 1000 ft² (93 m²) if enclosed with not less than 1-hour fire resistance–rated construction
   c. Enclosed areas underneath grandstands that comply with 13.4.8.5

13.3.5.4 Where another provision of this chapter requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with 9.7.1.1(1).

13.3.6 Corridors. (No requirements.)

13.4 Special Provisions.
(4) Fire hazards  
(5) Permanent and temporary structural systems 
(6) Severe weather conditions 
(7) Earthquakes 
(8) Civil or other disturbances 
(9) Hazardous materials incidents within and near the facility 
(10) Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility

13.4.1.3* Building Systems and Facility Management Assessments. Life safety evaluations shall include assessments of both building systems and facility management features upon which reliance is placed for the safety of facility occupants, and such assessments shall consider scenarios appropriate to the facility.

13.4.1.3.1 Building Systems. Documentation of the building systems in accordance with 13.4.1.4 shall be provided upon request of the authority having jurisdiction AHJ.

13.4.1.3.2 Facility Management. Facility management shall provide the authority having jurisdiction AHJ (AHJ) with facility management documentation in accordance with 13.4.1.5 upon request of the AHJ.

13.4.1.3.3 The life safety evaluation shall confirm that the building systems and the facility management and operational plans provide appropriate safety measures.

13.4.1.4 Life Safety Evaluation. The life safety evaluation shall confirm that the building systems and the facility management and operational plans provide appropriate safety measures.

13.4.1.4.1 (Reserved.)

13.4.1.4.2 Life Safety Narrative. A life safety narrative shall be provided describing the following:

1. Building occupancy, construction type, and intended uses and events
2. Building area and population capacity of the proposed facility
3. Principal fire and life safety features/strategies for the building, such as the following:
   a. Sprinkler protection
   b. Smoke control/protection
   c. Fire alarm — visual and audible
   d. P.A system
   e. Emergency power and lighting
   f. Provisions for patrons with disabilities
   g. Fire department access
   h. Fire/Emergency command center
4. Exterior construction design parameters used/applied

13.4.1.4.3 Life safety Floor Plans. Life safety floor plans of each level shall be provided with the following:

1. Occupant load, exit location, exit capacity, main exit/entry, horizontal exits, travel distance, and exit discharge
2. Fire and smoke barriers
3. Areas of smoke-protected assembly occupancy
4. Separate smoke-protected areas or zones, if applicable
5. Areas of other occupancy type and separations, if required
6. Unprotected vertical openings, such as atriums, communicating spaces, and convenience openings
(7) Event plans for each anticipated type of event depicting the following:
(a) Seating configuration
(b) Exhibit booth layout
(c) Stage location
(d) Occupant load, exit capacity required, exits provided, and travel distance.
(e) Any floor or stage use restrictions
(f) Plan and/or section drawing indicating areas where the roof construction is more than 50 feet and limits of sprinkler protection.
(g) Areas of refuge — Interior and Exterior

13.4.1.4.4 Engineering Analysis and Calculations. An engineering analysis and calculations shall be provided with the following:
(1) Smoke protection calculations as follows:
(a) NFPA92, Standard for Smoke Control Systems, to derive smoke exhaust and fresh air requirements per NFPA 92, Standard for Smoke Control
(b) Smoke maintained at a level six feet above the floor of the means of egress
(c) Proposed testing protocol for smoke system and pass/fail criteria
(d) Calculations for performance-based design methods accepted by the AHJ
(e) Smoke and fire modeling
(f) Timed egress analysis
(g) Assumed flow rates and travel speed
(2) Sprinkler protection calculations, including an engineering analysis substantiating locations in accordance with 1213.3.5.3 where sprinkler protection would be ineffective due to height and combustible loading
(3) Load diagram of rigging/load capacity of gridiron, fly loft, or long-span roof structure used for hanging overhead objects

13.4.1.5 Life Safety Management Document. The authority having jurisdiction shall be provided with a life safety management document providing the information required in 13.4.1.5.2 through 13.4.1.5.7.

13.4.1.5.1 (Reserved.)

13.4.1.5.2 Facility Management and Operational Plans. Facility management and operational plans shall address the following:
(1) Best practices adopted or recognized
(2) Emergency plans
(3) Evacuation plans
(4) Shelter-in-place plans including capacities and protection considerations
(5) Crowd management training plans
(6) Safety plans, which include the following:
(a) Training plans
(b) Safety equipment plans
(7) Fire alarm, smoke system protocol, and testing plans
(8) First aid or medical treatment plans, which include the following:
(a) Defined levels of service
(b) Standing orders adopted
(c) Supply and equipment plan
(9) Housekeeping plans — biological, medical, hazardous materials cleaning
(10) Emergency communication plans, which include the following:
(a) Chain of authority and incident command system employed
(b) Contact information for:
i. Venue personnel
ii. Emergency management and response organizations, (e.g., fire, police, medical, utility, transportation, key stakeholders)
(c) Communication systems
(d) Standard announcement for incidents or emergency situations
(11) Risk and threat assessment for venue and surrounding area for the following:
(a) Severe weather
(b) Hazardous materials
(c) Terrorism
(12) Operating procedures and protocols for risks, such as the following:
(a) Severe weather preparedness and monitoring plans
(b) Hazardous materials incidence response plans
(c) Terrorism response plans
(13) First responder response/arrival routes plans
(14) Alcohol management plans
(15) Food safety plans
(16) Rigging and temporary performance structure, which includes the following:
(a) Design and safety review plans
(b) Emergency action plans
(17) Chemical and hazardous materials information and data
(18) Barrier and wall protection plans for motor sports or similar events

13.4.1.5.3 Records. Records of the facility management plans, including procedures and location, shall be maintained; for the following:
(1) Crowd management training
(2) Safety training
(3) Fire alarm, smoke system maintenance, and test records
(4) First aid or medical treatment and regulation compliance

13.4.1.5.4 Building Systems Reference Guide. A building systems reference guide shall be provided in accordance with 13.4.1.5.4.1 through 13.4.1.5.4.3.
13.4.1.5.4.1 A basic life safety building systems reference guide shall be developed and maintained.
13.4.1.5.4.2 The life safety building systems reference guide shall contain the important and key information for the venue management’s use when planning events/activities for the safety of patrons, performers/participants, employees, and vendors.
13.4.1.5.4.3 The life safety building systems document in accordance with 13.4.1.4 shall be permitted to be used, but the life safety building systems reference guide shall include the following:
(1) Occupant capacity of every space/room
(2) Egress flow diagrams, including assumed flow rates, and capacities of all aisles and hallways, including public and nonpublic areas
(3) Capacities of all exterior doors and/or choke points in immediate perimeter areas
(4) Limitations or assumptions for ingress control that could be in place during an emergency egress/evacuation, including control gates, queuing barriers, and turnstiles
(5) Capacities of immediate perimeter exterior walkways, including assumed flow rates for exterior areas
(6) Assumed egress paths for normal conditions — transportation modes
(7) Management level (lay) sequencing charts for alarm and emergency communication systems, the manual, or override options/instructions that include the following:
(a) List of codes or alarm signals
(b) Location of manual overrides
(c) Description of what exactly happens during an alarm, such as exhaust fans or doors open
(8) Principle fire and life safety features/strategies, such as sprinklers, smoke control, fire alarm
notifications, PA system, fire department access
(9) Assumptions when developing occupancy plans for venue floor, open areas, and nonevent
spaces
(a) Event floor plans/setup diagrams for each typical event/activity
(b) Fire sprinkler and smoke protection capabilities
(10) Severe weather shelter areas, locations, structure considerations (limitations), capacities
(occupancy and density factor)
(11) Command center, which includes the following:
(a) Location (formal or informal)
(b) Structural integrity considerations
(c) Redundant locations and/or capabilities
(d) Jurisdictional rights assumed and/or applied
(12) Locations and capacities of wheelchair and mobility-impaired seating
(13) Locations and capacities of “Safe Haven” areas
(14) Rigging or structural load capacities of grids, truss structure, fly lofts, ceilings, floors, ramps,
staging, etc.
(15) List of locations of emergency equipment (i.e., fire extinguishers, fire hose cabinets, fire
hydrants, AED’s, etc.)
(16) Sequencing of electrical service, such as the following:
(a) Emergency generators and charts of all areas illuminated during power outages
(b) Multiple electrical feed capabilities
(17) List of mechanical, moveable equipment in the facility
(18) Potential hazards in the surrounding neighborhood, including train tracks and propane stations
(19) Assumptions or accommodations considered and used in design

13.4.1.4.5.5 The facility management plans shall be maintained and adjusted as necessary for
changes to the venue structure, operating purposes and style, and event occupancy.

13.4.1.4.5.6 Facility management and operational plans shall be reviewed by the authority having
jurisdiction (AHJ) annually.

13.4.1.4.5.7 For events and activities at the venue that are outside the normal operating conditions or
vary from the normal facility management plans, the following shall apply:
(1) Facility management shall perform an event/activity-specific facility management plan for the
authority having jurisdiction (AHJ) to review.
(2) The authority having jurisdiction (AHJ) shall provide guidance as needed, but approval of the
authority having jurisdiction (AHJ) for the specific facility management plan shall occur prior to such
event.

13.4.2* Smoke-Protected Assembly Seating.

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[FR 1045: FileMaker]

13.4.2.1 To be considered smoke protected, an assembly seating facility shall comply with both of
the following:
(1) All enclosed areas with walls and ceilings in buildings or structures containing smoke-protected
assembly seating shall be protected with an approved automatic sprinkler system in accordance with
Section 9.7, unless otherwise permitted by one of the following:
(a) The requirement of 13.4.2.1(1) shall not apply to the floor area used for contest, performance, or
entertainment, provided that the roof construction is more than 50 ft (15 m) above the floor level and
use is restricted to low fire hazard uses.
(b) Sprinklers shall not be required to be located over the floor area used for contest, performance, or entertainment and over the seating areas where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading.

(2) All means of egress serving a smoke-protected assembly seating area shall be provided with smoke-actuated ventilation facilities or natural ventilation designed to maintain the level of smoke at not less than 6 ft (1830 m) above the floor of the means of egress.

13.4.2.2 To use the provisions of smoke-protected assembly seating, a facility shall be subject to a life safety evaluation in accordance with 13.4.1.

13.4.2.3 Minimum clear widths of aisles and other means of egress serving smoke-protected assembly seating shall be in accordance with Table 13.4.2.3.

<table>
<thead>
<tr>
<th>Table 13.4.2.3</th>
<th>Capacity Factors for Smoke-Protected Assembly Seating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Seats</td>
<td>Clear Width per Seat Served</td>
</tr>
<tr>
<td></td>
<td>Stairs</td>
</tr>
<tr>
<td></td>
<td>in.</td>
</tr>
<tr>
<td>2,000</td>
<td>0.300 AB</td>
</tr>
<tr>
<td>5,000</td>
<td>0.200 AB</td>
</tr>
<tr>
<td>10,000</td>
<td>0.130 AB</td>
</tr>
<tr>
<td>15,000</td>
<td>0.096 AB</td>
</tr>
<tr>
<td>20,000</td>
<td>0.076 AB</td>
</tr>
<tr>
<td>≥25,000</td>
<td>0.060 AB</td>
</tr>
</tbody>
</table>

13.4.2.4 Outdoor Smoke-Protected Assembly Seating.

13.4.2.4.1 Where smoke-protected assembly seating and its means of egress are located wholly outdoors, capacity shall be permitted to be provided in accordance with Table 13.4.2.4.1 and the provision of 13.4.2.4.2 shall apply.

<table>
<thead>
<tr>
<th>Table 13.4.2.4.1</th>
<th>Capacity Factors for Outdoor Smoke-Protected Assembly Seating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature</td>
<td>Clear Width per Seat Served</td>
</tr>
<tr>
<td></td>
<td>Stairs</td>
</tr>
<tr>
<td>Outdoor smoke-protected assembly seating</td>
<td>0.08 AB</td>
</tr>
</tbody>
</table>

13.4.2.4.2 Where the number of seats in outdoor smoke-protected assembly seating exceeds 20,000, the capacity factors of Table 13.4.2.3 shall be permitted to be used.

13.4.2.5 Where using Table 13.4.2.3, the number of seats specified shall be within a single assembly space, and interpolation shall be permitted between the specific values shown. A single seating space shall be permitted to have multiple levels, floors, or mezzanines.
13.4.2.6  The minimum clear widths shown in Table 13.4.2.3 and Table 13.4.2.4.1 shall be modified in accordance with all of the following:

1)  If risers exceed 7 in. in height, the stair width in Table 13.4.2.3 and Table 13.4.2.4.1 shall be multiplied by factor $A$, where $A$ equals the following:

\[ A = 1 + \frac{\text{riser height} - 7}{5} \]

2)  If risers exceed 178 mm in height, the stair width in Table 13.4.2.3 and Table 13.4.2.4.1 shall be multiplied by factor $A$, where $A$ equals the following:

\[ A = 1 + \frac{\text{riser height} - 178}{125} \]

3)  Stairs not having a handrail within a 30 in. (760 mm) horizontal distance shall be 25 percent wider than otherwise calculated; that is, their width shall be multiplied by factor $B$, where $B$ equals the following:

\[ B = 1.25 \]

4)  Ramps steeper than 1 in 10 slope used in ascent shall have their width increased by 10 percent; that is, their width shall be multiplied by factor $C$, where $C$ equals the following:

\[ C = 1.10 \]

13.4.2.7  Where smoke-protected assembly seating conforms to the requirements of 13.4.2, for rows of seats served by aisles or doorways at both ends, the number of seats per row shall not exceed 100, and the clear width of not less than 12 in. (305 mm) for aisle accessways shall be increased by 0.3 in. (7.6 mm) for every additional seat beyond the number stipulated in Table 13.4.2.7; however, the minimum clear width shall not be required to exceed 22 in. (560 mm).

<table>
<thead>
<tr>
<th>Total Number of Seats in the Space</th>
<th>Number of Seats per Row Permitted to Have a Clear Width Aisle Accessway of Not Less than 12 in. (305 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>15</td>
<td>7</td>
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<tr>
<td>16</td>
<td>8</td>
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<tr>
<td>18</td>
<td>9</td>
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<tr>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>
13.4.2.9 Smoke-protected assembly seating conforming with the requirements of 13.4.2 shall be permitted to have a common path of travel of 50 ft (15 m) from any seat to a point where a person has a choice of two directions of egress travel.

13.4.2.10 Aisle accessways shall be permitted to serve as one or both of the required exit accesses addressed in 12.4.2.9, provided that the aisle accessway has a minimum width of 12 in. (305 mm) plus 0.3 in. (7.6 mm) for every additional seat over a total of 7 in a row.

13.4.2.11 Where smoke-protected assembly seating conforms to the requirements of 13.4.2, the dead ends in aisle stairs shall not exceed a distance of 21 rows, unless both of the following criteria are met:

1. The seats served by the dead-end aisle are not more than 40 seats from another aisle.
2. The 40-seat distance is measured along a row of seats having an aisle accessway with a clear width of not less than 12 in. (305 mm) plus 0.3 in. (7.6 mm) for each additional seat above 7 in the row.

13.4.2.12 Where smoke-protected assembly seating conforms to the requirements of 13.4.2, the travel distance from each seat to the nearest entrance to an egress vomitory or egress concourse shall not exceed 400 ft (122 m).

13.4.2.13 Where smoke-protected assembly seating conforms to the requirements of 13.4.2, the travel distance from the entrance to the vomitory or from the egress concourse to an approved egress stair, ramp, or walk at the building exterior shall not exceed 200 ft (61 m).

13.4.2.14 The travel distance requirements of 13.4.2.12 and 13.4.2.13 shall not apply to outdoor assembly seating facilities of Type I or Type II construction where all portions of the means of egress are essentially open to the outside.

13.4.3 Limited Access or Underground Buildings. Limited access or underground buildings shall comply with Section 11.7.

13.4.4 High-Rise Buildings. Existing high-rise buildings that house assembly occupancies in high-rise portions of the building shall have the highest level of the assembly occupancy and all levels below protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7. (See also 13.1.6.)

13.4.5 Stages and Platforms. See 3.3.262 and 3.3.209.

13.4.5.1 Materials and Design.

13.4.5.1.1 Reserved.

13.4.5.1.2 Stage stairs shall be permitted to be of combustible materials, regardless of building construction type.

13.4.5.2 Platform Construction. (Reserved)

13.4.5.3 Stage Construction. (Reserved)

13.4.5.4 Accessory Rooms. (Reserved)

13.4.5.5 Ventilators. Regular stages in excess of 1000 ft² (93 m²) and legitimate stages shall be provided with emergency ventilation to provide a means of removing smoke and combustion gases directly to the outside in the event of a fire, and such ventilation shall be achieved by one or a combination of the methods specified in 13.4.5.5.1 through 13.4.5.5.3.

13.4.5.5.1 Smoke Control.

13.4.5.5.1.1 A means complying with Section 9.3 shall be provided to maintain the smoke level at not less than 6 ft (1830 mm) above the highest level of assembly seating or above the top of the proscenium opening where a proscenium wall and opening protection are provided.

13.4.5.5.1.2 Reserved.

13.4.5.5.1.3 The smoke control system shall be activated independently by each of the following:

1. Activation of the sprinkler system in the stage area
2. Activation of smoke detectors over the stage area
(3) Activation by manually operated switch at an approved location

13.4.5.5.1.4 The emergency ventilation system shall be supplied by both normal and standby power.

13.4.5.5.1.5 The fan(s) power wiring and ducts shall be located and properly protected to ensure a minimum of 20 minutes of operation in the event of activation.

13.4.5.5.2 Roof Vents.

13.4.5.5.2.1 Two or more vents shall be located near the center of and above the highest part of the stage area.

13.4.5.5.2.2 The vents shall be raised above the roof and shall provide a net free vent area equal to 5 percent of the stage area.

13.4.5.5.2.3 Vents shall be constructed to open automatically by approved heat-activated devices, and supplemental means shall be provided for manual operation and periodic testing of the ventilator from the stage floor.

13.4.5.5.2.4 Vents shall be labeled.

13.4.5.5.2.5 Existing roof vents that are not labeled shall be permitted where they open by spring action or force of gravity sufficient to overcome the effects of neglect, rust, dirt, frost, snow, or expansion by heat or warping of the framework, and the following requirements also shall apply:

1. Glass, if used in vents, shall be protected against falling onto the stage.

2. A wire screen, if used under the glass, shall be placed so that, if clogged, it does not reduce the required venting area, interfere with the operating mechanism, or obstruct the distribution of water from an automatic sprinkler.

3. Vents shall be arranged to open automatically by the use of fusible links.

4. The fusible links and operating cable shall hold each door closed against a minimum 30 lb (133 N) counterforce that shall be exerted on each door through its entire arc of travel and for not less than 115 degrees.

5. Vents shall be provided with manual control.

6. Springs, where employed to actuate vent doors, shall be capable of maintaining full required tension.

7. Springs shall not be stressed more than 50 percent of their rated capacity and shall not be located directly in the airstream nor exposed to the outside.

8. A fusible link shall be placed in the cable control system on the underside of the vent at or above the roofline, or as approved by the building official.

9. The fusible link shall be located so as not to be affected by the operation of an automatic sprinkler system.

10. Remote, manual, or electric controls shall provide for both opening and closing of the vent doors for periodic testing and shall be located at a point on stage designated by the authority having jurisdiction.

11. Where remote control vents are electrical, power failure shall not affect instant operation of the vent in the event of fire.

12. Hand winches shall be permitted to be employed to facilitate operation of manually controlled vents.

13.4.5.5.3 Other Means. Approved, alternate means of removing smoke and combustion gases shall be permitted.

13.4.5.6 Proscenium Walls. (Reserved)

13.4.5.7 Proscenium Opening Protection.

13.4.5.7.1 On every legitimate stage, the main proscenium opening used for viewing performances shall be provided with proscenium opening protection as follows:

1. The proscenium opening protection shall comply with 12.4.5.7.

2. Asbestos shall be permitted in lieu of a listed fabric.
(3) Manual curtains of any size shall be permitted.

13.4.5.7.2 In lieu of the protection required by 13.4.5.7.1(1), all the following shall be provided:

(1) A noncombustible opaque fabric curtain shall be arranged so that it closes automatically.

(2) An automatic, fixed waterspray deluge system shall be located on the auditorium side of the proscenium opening and shall be arranged so that the entire face of the curtain will be wetted, and all of the following requirements also shall apply:

(a) The system shall be activated by a combination of rate-of-rise and fixed-temperature detectors located on the ceiling of the stage.

(b) Detectors shall be spaced in accordance with their listing.

(c) The water supply shall be controlled by a deluge valve and shall be sufficient to keep the curtain completely wet for 30 minutes or until the valve is closed by fire department personnel.

(3) The curtain shall be automatically operated in case of fire by a combination of rate-of-rise and fixed-temperature detectors that also activates the deluge spray system.

(4) Stage sprinklers and vents shall be automatically operated by fusible elements in case of fire.

(5) Operation of the stage sprinkler system or spray deluge valve shall automatically activate the emergency ventilating system and close the curtain.

(6) The curtain, vents, and spray deluge system valve shall also be capable of manual operation.

13.4.5.7.3 Proscenium opening protection provided by other than a fire curtain in accordance with 12.4.5.7 [see 13.4.5.7.1(1)] shall activate upon automatic detection of a fire and upon manual activation.

13.4.5.8 Gridirons, Fly Galleries, and Pinrails. (Reserved)

13.4.5.9 Catwalks. The clear width of lighting and access catwalks and the means of egress from galleries and gridirons shall be not less than 22 in. (560 mm).

13.4.5.10 Fire Protection. Every stage shall be protected by an approved automatic sprinkler system in compliance with Section 9.7.

13.4.5.10.1 Protection shall be provided throughout the stage and in storerooms, workshops, permanent dressing rooms, and other accessory spaces contiguous to stages.

13.4.5.10.2 Sprinklers shall not be required for stages 1000 ft² (93 m²) or less in area where both of the following criteria are met:

(1) Curtains, scenery, or other combustible hangings are not retractable vertically.

(2) Combustible hangings are limited to borders, legs, a single main curtain, and a single backdrop.

13.4.5.10.3 Sprinklers shall not be required under stage areas less than 48 in. (1220 mm) in clear height that are used exclusively for chair or table storage and lined on the inside with 5⁄8 in. (16 mm) Type X gypsum wallboard or the approved equivalent.

13.4.5.11 Flame-Retardant Requirements.

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13.4.5.11.1 Combustible scenery of cloth, film, vegetation (dry), and similar materials shall comply with one of the following:

(1) They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

(2) They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source.
13.4.5.11.2 Foamed plastics (see definition of cellular or foamed plastic in 3.3.41) shall be permitted to be used if they exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289, *Standard Method of Fire Test for Individual Fuel Packages*, using the 20 kW ignition source or by specific approval of the authority having jurisdiction.

13.4.5.11.3 Scenery and stage properties not separated from the audience by proscenium opening protection shall be of noncombustible materials, limited-combustible materials, or fire-retardant-treated wood.

13.4.5.11.4 In theaters, motion picture theaters, and television stage settings, with or without horizontal projections, and in simulated caves and caverns of foamed plastic, any single fuel package shall have a heat release rate not to exceed 100 kW where tested in accordance with any one of the following:

(1) ANSI/UL 1975, *Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes*

(2) NFPA 289, *Standard Method of Fire Test for Individual Fuel Packages*, using the 20 kW ignition source

13.4.5.12* Standpipes.

13.4.5.12.1 Stages over 1000 ft² (93 m²) in area shall be equipped with 1½ in. (38 mm) hose lines for first aid fire fighting at each side of the stage.

13.4.5.12.2 Hose connections shall be in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, unless Class II or Class III standpipes in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*, are used.

13.4.6 Projection Rooms.

13.4.6.1 Projection rooms shall comply with 13.4.6.2 through 13.4.6.10.

13.4.6.2 Where cellulose nitrate film is used, the projection room shall comply with NFPA 40, *Standard for the Storage and Handling of Cellulose Nitrate Film*.

13.4.6.3 Film or video projectors or spotlights utilizing light sources that produce particulate matter or toxic gases, or light sources that produce hazardous radiation, without protective shielding shall be located within a projection room complying with 13.3.2.1.2.

13.4.6.4 Every projection room shall be of permanent construction consistent with the building construction type in which the projection room is located and shall comply with the following:

(1) Openings shall not be required to be protected.

(2) The room shall have a floor area of not less than 80 ft² (7.4 m²) for a single machine and not less than 40 ft² (3.7 m²) for each additional machine.

(3) Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space of not less than 30 in. (760 mm) on each side and at its rear, but only one such space shall be required between adjacent projectors.

13.4.6.5 The projection room and the rooms appurtenant to it shall have a ceiling height of not less than 7 ft 6 in. (2285 mm).

13.4.6.6 Each projection room for safety film shall have not less than one out-swinging, self-closing door not less than 30 in. (760 mm) wide and 6 ft 8 in. (2030 mm) high.

13.4.6.7 The aggregate of ports and openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium, and all openings shall be provided with glass or other approved material so as to completely close the opening.

13.4.6.8 Projection room ventilation shall comply with 13.4.6.8.1 and 13.4.6.8.2.

13.4.6.8.1 Supply Air.
13.4.6.8.1.1 Each projection room shall be provided with adequate air supply inlets arranged to provide well-distributed air throughout the room.

13.4.6.8.1.2 Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment.

13.4.6.8.1.3 Air shall be permitted to be taken from the outside; from adjacent spaces within the building, provided that the volume and infiltration rate is sufficient; or from the building air-conditioning system, provided that it is arranged to supply sufficient air whether or not other systems are in operation.

13.4.6.8.2 Exhaust Air.

13.4.6.8.2.1 Projection booths shall be permitted to be exhausted through the lamp exhaust system.

13.4.6.8.2.2 The lamp exhaust system shall be positively interconnected with the lamp so that the lamp cannot operate unless there is sufficient airflow required for the lamp.

13.4.6.8.2.3 Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system.

13.4.6.8.2.4 The projection room ventilation system shall be permitted also to serve appurtenant rooms, such as the generator room and the rewind room.

13.4.6.9 Each projection machine shall be provided with an exhaust duct that draws air from each lamp and exhausts it directly to the outside of the building.

13.4.6.9.1 The lamp exhaust shall be permitted to exhaust air from the projection room to provide room air circulation.

13.4.6.9.2 Lamp exhaust ducts shall be of rigid materials, except for a flexible connector approved for the purpose.

13.4.6.9.3 The projection lamp and projection room exhaust systems shall be permitted to be combined but shall not be interconnected with any other exhaust system or return-air system within the buildings.

13.4.6.9.4 Specifications for electric arc and xenon projection equipment shall comply with 13.4.6.9.4.1 and 13.4.6.9.4.2.

13.4.6.9.4.1 Electric Arc Projection Equipment. The exhaust capacity shall be 200 ft³/min (0.09 m³/s) for each lamp connected to the lamp exhaust system or as recommended by the equipment manufacturer, and auxiliary air shall be permitted to be introduced into the system through a screened opening to stabilize the arc.

13.4.6.9.4.2 Xenon Projection Equipment. The lamp exhaust system shall exhaust not less than 300 ft³/min (0.14 m³/s) per lamp, or not less than the exhaust volume required or recommended by the equipment manufacturer, whichever is greater.

13.4.6.10 Miscellaneous equipment and storage shall be protected as follows:

(1) Each projection room shall be provided with rewind and film storage facilities.

(2) Flammable liquids containers shall be permitted in projection rooms, provided that all of the following criteria are met:

(a) There are not more than four containers per projection room.
(b) No container has a capacity exceeding 16 oz (0.5 L).
(c) The containers are of a nonbreakable type.

(3) Appurtenant electrical equipment, such as rheostats, transformers, and generators, shall be permitted to be located within the booth or in a separate room of equivalent construction.

13.4.7* Special Amusement Buildings.

13.4.7.1* General. Special amusement buildings, regardless of occupant load, shall meet the requirements for assembly occupancies in addition to the requirements of 13.4.7, unless the special amusement building is a multilevel play structure that is not more than 10 ft (3050 mm) in height and has aggregate horizontal projections not exceeding 160 ft² (15 m²).
13.4.7.2* **Automatic Sprinklers.** Every special amusement building, other than buildings or structures not exceeding 10 ft (3050 mm) in height and not exceeding 160 ft<sup>2</sup> (15 m<sup>2</sup>) in aggregate horizontal projection, shall be protected throughout by an approved, supervised automatic sprinkler system installed and maintained in accordance with Section 9.7.

13.4.7.3 **Temporary Water Supply.** Where the special amusement building required to be sprinklered by 13.4.7.2 is movable or portable, the sprinkler water supply shall be permitted to be provided by an approved temporary means.

13.4.7.4 **Smoke Detection.** Where the nature of the special amusement building is such that it operates in reduced lighting levels, the building shall be protected throughout by an approved automatic smoke detection system in accordance with Section 9.6.

13.4.7.5 **Alarm Initiation.** Actuation of any smoke detection system device shall sound an alarm at a constantly attended location on the premises.

13.4.7.6 **Illumination.** Actuation of the automatic sprinkler system, or any other suppression system, or actuation of a smoke detection system having an approved verification or cross-zoning operation capability shall provide for both of the following:
(1) Increase in illumination in the means of egress to that required by Section 7.8
(2) Termination of any conflicting or confusing sounds and visuals

13.4.7.7 **Exit Marking.**
13.4.7.7.1 Exit marking shall be in accordance with Section 7.10.
13.4.7.7.2 Floor proximity exit signs shall be provided in accordance with 7.10.1.6.
13.4.7.7.3* In special amusement buildings where mazes, mirrors, or other designs are used to confound the egress path, approved directional exit marking that becomes apparent in an emergency shall be provided.

13.4.7.8 **Interior Finish.** Interior wall and ceiling finish materials complying with Section 10.2 shall be Class A throughout.

13.4.8 **Grandstands.**
13.4.8.1 **General.**
13.4.8.1.1 Grandstands shall comply with the provisions of this chapter as modified by 13.4.8.
13.4.8.1.2 Approved existing grandstands shall be permitted to be continued to be used.

13.4.8.2 **Seating.**
13.4.8.2.1 Where grandstand seating without backs is used indoors, rows of seats shall be spaced not less than 22 in. (560 mm) back-to-back.
13.4.8.2.2 The depth of footboards and seat boards in grandstands shall be not less than 9 in. (230 mm); where the same level is not used for both seat foundations and footrests, footrests independent of seats shall be provided.
13.4.8.2.3 Seats and footrests of grandstands shall be supported securely and fastened in such a manner that they cannot be displaced inadvertently.
13.4.8.2.4 Individual seats or chairs shall be permitted only if secured firmly in rows in an approved manner, unless seats do not exceed 16 in number and are located on level floors and within railed-in enclosures, such as boxes.
13.4.8.2.5 The maximum number of seats permitted between the farthest seat and an aisle in grandstands and bleachers shall not exceed that shown in Table 13.4.8.2.5.

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Bleachers (See 13.2.5.6.1.2.)

13.4.8.3 Special Requirements — Wood Grandstands.

13.4.8.3.1 An outdoor wood grandstand shall be erected within not less than two-thirds of its height, and, in no case, within not less than 10 ft (3050 mm), of a building, unless otherwise permitted by one of the following:

(1) The distance requirement shall not apply to buildings having minimum 1-hour fire resistance-rated construction with openings protected against the fire exposure hazard created by the grandstand.

(2) The distance requirement shall not apply where a wall having minimum 1-hour fire resistance-rated construction separates the grandstand from the building.

13.4.8.3.2 An outdoor wood grandstand unit shall not exceed 10,000 ft² (929 m²) in finished ground level area or 200 ft (61 m) in length, and all of the following requirements also shall apply:

(1) Grandstand units of the maximum size shall be placed not less than 20 ft (6100 mm) apart or shall be separated by walls having a minimum 1-hour fire resistance rating.

(2) The number of grandstand units erected in any one group shall not exceed three.

(3) Each group of grandstand units shall be separated from any other group by a wall having minimum 2-hour fire resistance-rated construction extending 24 in. (610 mm) above the seat platforms or by an open space of not less than 50 ft (15 m).

13.4.8.3.3 The finished ground level area or length required by 13.4.8.3.2 shall be permitted to be doubled where one of the following criteria is met:

(1) Where the grandstand is constructed entirely of labeled fire-retardant-treated wood that has passed the standard rain test, ASTM D 2898, Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.

(2) Where the grandstand is constructed of members conforming to dimensions for heavy timber construction [Type IV (2HH)].

13.4.8.3.4 The highest level of seat platforms above the finished ground level or the surface at the front of any wood grandstand shall not exceed 20 ft (6100 mm).

13.4.8.3.5 The highest level of seat platforms above the finished ground level, or the surface at the front of a portable grandstand within a tent or membrane structure, shall not exceed 12 ft (3660 mm).

13.4.8.3.6 The height requirements specified in 13.4.8.3.4 and 13.4.8.3.5 shall be permitted to be doubled where the grandstand is constructed entirely of labeled fire-retardant-treated wood that has passed the standard rain test, ASTM D 2898, Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing, or where constructed of members conforming to dimensions for heavy timber construction [Type IV (2HH)].

13.4.8.4 Special Requirements — Portable Grandstands.

13.4.8.4.1 Portable grandstands shall conform to the requirements of 13.4.8 for grandstands and the requirements of 13.4.8.4.2 through 13.4.8.4.7.

13.4.8.4.2 Portable grandstands shall be self-contained and shall have within them all necessary parts to withstand and restrain all forces that might be developed during human occupancy.

13.4.8.4.3 Portable grandstands shall be designed and manufactured so that, if any structural members essential to the strength and stability of the structure have been omitted during erection, the presence of unused connection fittings shall make the omissions self-evident.

13.4.8.4.4 Portable grandstand construction shall be skillfully accomplished to produce the strength required by the design.

13.4.8.4.5 Portable grandstands shall be provided with base plates, sills, floor runners, or sleepers of such area that the permitted bearing capacity of the supporting material is not exceeded.

13.4.8.4.6 Where a portable grandstand rests directly on a base of such character that it is incapable of supporting the load without appreciable settlement, mud sills of suitable material, having
sufficient area to prevent undue or dangerous settlement, shall be installed under base plates, runners, or sleepers.

13.4.8.4.7 All bearing surfaces shall be in contact with each other.

13.4.8.5 Spaces Underneath Grandstands. Spaces underneath a grandstand shall be kept free of flammable or combustible materials, unless protected by an approved, supervised automatic sprinkler system in accordance with Section 9.7 or unless otherwise permitted by one of the following:

(1) This requirement shall not apply to accessory uses of 300 ft² (28 m²) or less, such as ticket booths, toilet facilities, or concession booths, where constructed of noncombustible or fire-resistive construction in otherwise nonsprinklered facilities.

(2) This requirement shall not apply to rooms that are enclosed in not less than 1-hour fire resistance-rated construction and are less than 1000 ft² (93 m²) in otherwise nonsprinklered facilities.

13.4.8.6 Guards and Railings.

13.4.8.6.1 Railings or guards not less than 42 in. (1065 mm) above the aisle surface or footrest or not less than 36 in. (915 mm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all grandstands where the seats are in excess of 48 in. (1220 mm) above the floor or the finished ground level.

13.4.8.6.2 The requirement of 13.4.8.6.1 shall not apply where an adjacent wall or fence affords equivalent safeguard.

13.4.8.6.3 Where the front footrest of any grandstand is more than 24 in. (610 mm) above the floor, railings or guards not less than 33 in. (825 mm) above such footrests shall be provided.

13.4.8.6.4 The railings required by 13.4.8.6.3 shall be permitted to be not less than 26 in. (660 mm) high in grandstands or where the front row of seats includes backrests.

13.4.8.6.5 Cross aisles located within the seating area shall be provided with rails not less than 26 in. (660 mm) high along the front edge of the cross aisle.

13.4.8.6.6 The railings specified by 13.4.8.6.5 shall not be required where the backs of the seats in front of the cross aisle project 24 in. (610 mm) or more above the surface of the cross aisle.

13.4.8.6.7 Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

13.4.8.6.8 An opening between the seat board and footboard located more than 30 in. (760 mm) above the finished ground level shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

13.4.9 Folding and Telescopic Seating.

13.4.9.1 General.

13.4.9.1.1 Folding and telescopic seating shall comply with the provisions of this chapter as modified by 13.4.9.

13.4.9.1.2 Approved existing folding and telescopic seating shall be permitted to be continued to be used.

13.4.9.2 Seating.

13.4.9.2.1 The horizontal distance of seats, measured back-to-back, shall be not less than 22 in. (560 mm) for seats without backs, and all of the following requirements shall also apply:

(1) There shall be a space of not less than 12 in. (305 mm) between the back of each seat and the front of each seat immediately behind it.

(2) If seats are of the chair type, the 12 in. (305 mm) dimension shall be measured to the front edge of the rear seat in its normal unoccupied position.

(3) All measurements shall be taken between plumb lines.
13.4.9.2.2 The depth of footboards (footrests) and seat boards in folding and telescopic seating shall be not less than 9 in. (230 mm).
13.4.9.2.3 Where the same level is not used for both seat foundations and footrests, footrests independent of seats shall be provided.
13.4.9.2.4 Individual chair-type seats shall be permitted in folding and telescopic seating only if firmly secured in groups of not less than three.
13.4.9.2.5 The maximum number of seats permitted between the farthest seat in an aisle in folding and telescopic seating shall not exceed that shown in Table 13.4.8.2.5.

13.4.9.3 Guards and Railings.
13.4.9.3.1 Railings or guards not less than 42 in. (1065 mm) above the aisle surface or footrest, or not less than 36 in. (915 mm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all folding and telescopic seating where the seats are more than 48 in. (1220 mm) above the floor or the finished ground level.
13.4.9.3.2 The requirement of 13.4.9.3.1 shall not apply where an adjacent wall or fence affords equivalent safeguard.
13.4.9.3.3 Where the front footrest of folding or telescopic seating is more than 24 in. (610 mm) above the floor, railings or guards not less than 33 in. (825 mm) above such footrests shall be provided.
13.4.9.3.4 The railings required by 13.4.9.3.3 shall be permitted to be not less than 26 in. (660 mm) high where the front row of seats includes backrests.
13.4.9.3.5 Cross aisles located within the seating area shall be provided with rails not less than 26 in. (660 mm) high along the front edge of the cross aisle.
13.4.9.3.6 The railings specified by 13.4.9.3.5 shall not be required where the backs of the seats in front of the cross aisle project 24 in. (610 mm) or more above the surface of the cross aisle.
13.4.9.3.7 Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.
13.4.9.3.8 An opening between the seat board and footboard located more than 30 in. (760 mm) above the finished ground level shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

13.4.10 Airport Loading Walkways.
13.4.10.1 Airport loading walkways shall conform to NFPA 415, Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways, and the provisions of 13.4.10.2 and 13.4.10.3.
13.4.10.2 Doors in the egress path from the aircraft through the airport loading walkway into the airport terminal building shall meet both of the following criteria:
(1) They shall swing in the direction of egress from the aircraft.
(2) They shall not be permitted to have delayed-egress locks.
13.4.10.3 Exit access shall be unimpeded from the airport loading walkway to the nonsecured public areas of the airport terminal building.

13.5 Building Services.
13.5.1 Utilities. Utilities shall comply with the provisions of Section 9.1.
13.5.2 Heating, Ventilating, and Air-Conditioning Equipment. Heating, ventilating, and air-conditioning equipment shall comply with the provisions of Section 9.2.
13.5.3 Elevators, Escalators, and Conveyors. Elevators, escalators, and conveyors shall comply with the provisions of Section 9.4.
13.5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 9.5.
13.6 Reserved.

13.7 Operating Features.

13.7.1 Means of Egress Inspection.

13.7.1.1 The building owner or agent shall inspect the means of egress to ensure it is maintained free of obstructions, and correct any deficiencies found, prior to each opening of the building to the public.

13.7.1.2 The building owner or agent shall prepare and maintain records of the date and time of each inspection on approved forms, listing any deficiencies found and actions taken to correct them.

13.7.1.3 Inspection of Door Openings. Door openings shall be inspected in accordance with 7.2.1.15.

13.7.2 Special Provisions for Food Service Operations.

13.7.2.1 All devices in connection with the preparation of food shall be installed and operated to avoid hazard to the safety of occupants.

13.7.2.2 All devices in connection with the preparation of food shall be of an approved type and shall be installed in an approved manner.

13.7.2.3 Food preparation facilities shall be protected in accordance with 9.2.3 and shall not be required to have openings protected between food preparation areas and dining areas.

13.7.2.4 Portable cooking equipment that is not flue-connected shall be permitted only as follows:

(1) Equipment fueled by small heat sources that can be readily extinguished by water, such as candles or alcohol-burning equipment, including solid alcohol, shall be permitted to be used, provided that precautions satisfactory to the authority having jurisdiction AHJ are taken to prevent ignition of any combustible materials.

(2) Candles shall be permitted to be used on tables used for food service where securely supported on substantial noncombustible bases located to avoid danger of ignition of combustible materials and only where approved by the authority having jurisdiction AHJ.

(3) Candle flames shall be protected.

(4) “Flaming sword” or other equipment involving open flames and flamed dishes, such as cherries jubilee or crêpes suzette, shall be permitted to be used, provided that precautions subject to the approval of the authority having jurisdiction AHJ are taken.

(5)* Listed and approved LP-Gas commercial food service appliances shall be permitted to be used in accordance with NFPA 58, Liquefied Petroleum Gas Code.

13.7.3 Open Flame Devices and Pyrotechnics. No open flame devices or pyrotechnic devices shall be used in any assembly occupancy, unless otherwise permitted by one of the following:

(1) Pyrotechnic special effect devices shall be permitted to be used on stages before proximate audiences for ceremonial or religious purposes, as part of a demonstration in exhibits, or as part of a performance, provided that both of the following criteria are met:

(a) Precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material.

(b) Use of the pyrotechnic device complies with NFPA 1126, Standard for the Use of Pyrotechnics Before a Proximate Audience.

(2) Flame effects before an audience shall be permitted in accordance with NFPA 160, Standard for the Use of Flame Effects Before an Audience.

(3) Open flame devices shall be permitted to be used in the following situations, provided that precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible material or injury to occupants:

(a)* For ceremonial or religious purposes
(b) On stages and platforms where part of a performance
(c) Where candles on tables are securely supported on substantial noncombustible bases and candle flame is protected
(4) The requirement of 13.7.3 shall not apply to heat-producing equipment complying with 9.2.2.
(5) The requirement of 13.7.3 shall not apply to food service operations in accordance with 13.7.2.
(6) Gas lights shall be permitted to be used, provided that precautions are taken, subject to the approval of authority having jurisdiction, to prevent ignition of any combustible materials.

13.7.4 Furnishings, Decorations, and Scenery.

13.7.4.1 Fabrics and films used for decorative purposes, all draperies and curtains, and similar furnishings shall be in accordance with the provisions of 10.3.1.

13.7.4.2 The authority having jurisdiction shall impose controls on the quantity and arrangement of combustible contents in assembly occupancies to provide an adequate level of safety to life from fire.

13.7.4.3 Exposed foamed plastic materials and unprotected materials containing foamed plastic used for decorative purposes or stage scenery shall have a heat release rate not exceeding 100 kW where tested in accordance with one of the following:
(1) ANSI/UL 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes
(2) NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source

13.7.4.4 The requirement of 13.7.4.3 shall not apply to individual foamed plastic items and items containing foamed plastic where the foamed plastic does not exceed 1 lb (0.45 kg) in weight.

13.7.5 Special Provisions for Exposition Facilities.

13.7.5.1 General. No display or exhibit shall be installed or operated to interfere in any way with access to any required exit or with the visibility of any required exit or required exit sign; nor shall any display block access to fire-fighting equipment.

13.7.5.2 Materials Not on Display. A storage room having an enclosure consisting of a smoke barrier having a minimum 1-hour fire resistance rating and protected by an automatic extinguishing system shall be provided for combustible materials not on display, including combustible packing crates used to ship exhibitors’ supplies and products.

13.7.5.3 Exhibits.

13.7.5.3.1 Exhibits shall comply with 13.7.5.3.2 through 13.7.5.3.11.

13.7.5.3.2 The travel distance within the exhibit booth or exhibit enclosure to an exit access aisle shall not exceed 50 ft (15 m).

13.7.5.3.3 The upper deck of multilevel exhibits exceeding 300 ft² (28 m²) shall have not less than two remote means of egress.

13.7.5.3.4 Exhibit booth construction materials shall be limited to the following:
(1) Noncombustible or limited-combustible materials
(2) Wood exceeding ¼ in. (6.3 mm) nominal thickness
(3) Wood that is pressure-treated, fire-retardant wood meeting the requirements of NFPA 703, Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials
(4) Flame-retardant materials complying with one of the following:
(a) They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

(b) They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source.

(5) Textile wall coverings, such as carpeting and similar products used as wall or ceiling finishes, complying with the provisions of 10.2.2 and 10.2.4

(6) Plastics limited to those that comply with 13.3.3 and Section 10.2

(7) Foamed plastics and materials containing foamed plastics having a heat release rate for any single fuel package that does not exceed 100 kW where tested in accordance with one of the following:
   (a) ANSI/UL 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes
   (b) NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source

(8) Cardboard, honeycombed paper, and other combustible materials having a heat release rate for any single fuel package that does not exceed 150 kW where tested in accordance with one of the following:
   (a) ANSI/UL 1975
   (b) NFPA 289, using the 20 kW ignition source

13.7.5.3.5 Curtains, drapes, and decorations shall comply with 10.3.1.

13.7.5.3.6 Acoustical and decorative material including, but not limited to, cotton, hay, paper, straw, moss, split bamboo, and wood chips shall be flame-retardant treated to the satisfaction of the authority having jurisdiction.

13.7.5.3.6.1 Materials that cannot be treated for flame retardancy shall not be used.

13.7.5.3.6.2 Foamed plastics, and materials containing foamed plastics and used as decorative objects such as, but not limited to, mannequins, murals, and signs shall have a heat release rate for any single fuel package that does not exceed 150 kW where tested in accordance with one of the following:
   (1) ANSI/UL 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes
   (2) NFPA 289, Standard Method of Fire Test for Individual Fuel Packages, using the 20 kW ignition source

13.7.5.3.6.3 Where the aggregate area of acoustical and decorative materials is less than 10 percent of the individual floor or wall area, such materials shall be permitted to be used subject to the approval of the authority having jurisdiction.

13.7.5.3.7 The following shall be protected by automatic extinguishing systems:
   (1) Single-level exhibit booths exceeding 300 ft² (28 m²) and covered with a ceiling
   (2) Each level of multilevel exhibit booths, including the uppermost level where the uppermost level is covered with a ceiling

13.7.5.3.7.1 The requirements of 13.7.5.3.7 shall not apply where otherwise permitted by the following:
   (1) Ceilings that are constructed of open grate design or listed dropout ceilings in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems, shall not be considered ceilings within the context of 13.7.5.3.7.
   (2) Vehicles, boats, and similar exhibited products having over 100 ft² (9.3 m²) of roofed area shall be provided with smoke detectors acceptable to the authority having jurisdiction.
The requirement of 13.7.5.3.7(2) shall not apply where fire protection of multilevel exhibit booths is consistent with the criteria developed through a life safety evaluation of the exhibition hall in accordance with 13.4.1, subject to approval of the authority having jurisdiction.

13.7.5.3.7.2 A single exhibit or group of exhibits with ceilings that do not require sprinklers shall be separated by a distance not less than 10 ft (3050 mm) where the aggregate ceiling exceeds 300 ft² (28 m²).

13.7.5.3.7.3 The water supply and piping for the sprinkler system shall be permitted to be of approved temporary means that is provided by a domestic water supply, a standpipe system, or a sprinkler system.

13.7.5.3.8 Open flame devices within exhibit booths shall comply with 13.7.3.

13.7.5.3.9 Cooking and food-warming devices in exhibit booths shall comply with 13.7.2 and all of the following:

(1) Gas-fired devices shall comply with all of the following:
(a) Natural gas-fired devices shall comply with 9.1.1.
(b) The requirement of 13.7.5.3.9(1)(a) shall not apply to compressed natural gas where permitted by the authority having jurisdiction.
(c) The use of LP-Gas cylinders shall be prohibited.
(d) Nonrefillable LP-Gas cylinders shall be approved for use where permitted by the authority having jurisdiction.
(2) The devices shall be isolated from the public by not less than 48 in. (1220 mm) or by a barrier between the devices and the public.
(3) Multi-well cooking equipment using combustible oils or solids shall comply with 9.2.3.
(4) Single-well cooking equipment using combustible oils or solids shall meet all of the following criteria:
(a) The equipment shall have lids available for immediate use.
(b) The equipment shall be limited to 2 ft² (0.2 m²) of cooking surface.
(c) The equipment shall be placed on noncombustible surface materials.
(d) The equipment shall be separated from each other by a horizontal distance of not less than 24 in. (610 mm).
(e) The requirement of 13.7.5.3.9(4)(d) shall not apply to multiple single-well cooking equipment where the aggregate cooking surface area does not exceed 2 ft² (0.2 m²).
(f) The equipment shall be kept at a horizontal distance of not less than 24 in. (610 mm) from any combustible material.
(5) A portable fire extinguisher in accordance with 9.7.4.1 shall be provided within the booth for each device, or an approved automatic extinguishing system shall be provided.

13.7.5.3.10 Combustible materials within exhibit booths shall be limited to a one-day supply. Storage of combustible materials behind the booth shall be prohibited. (See 13.7.4.2 and 13.7.5.2.)

13.7.5.3.11 Plans for the exposition, in an acceptable form, shall be submitted to the authority having jurisdiction for approval prior to setting up any exhibit.

13.7.5.3.11.1 The plan shall show all details of the proposed exposition.

13.7.5.3.11.2 No exposition shall occupy any exposition facility without approved plans.

13.7.5.4 Vehicles. Vehicles on display within an exposition facility shall comply with 13.7.5.4.1 through 13.7.5.4.5.

13.7.5.4.1 All fuel tank openings shall be locked and sealed in an approved manner to prevent the escape of vapors; fuel tanks shall not contain in excess of one-half their capacity or contain in excess of 10 gal (38 L) of fuel, whichever is less.

13.7.5.4.2 At least one battery cable shall be removed from the batteries used to start the vehicle engine, and the disconnected battery cable shall then be taped.
13.7.5.4.3 Batteries used to power auxiliary equipment shall be permitted to be kept in service.
13.7.5.4.4 Fueling or defueling of vehicles shall be prohibited.
13.7.5.4.5 Vehicles shall not be moved during exhibit hours.
13.7.5.5 **Prohibited Materials.**
13.7.5.5.1 The following items shall be prohibited within exhibit halls:
   (1) Compressed flammable gases
   (2) Flammable or combustible liquids
   (3) Hazardous chemicals or materials
   (4) Class II or greater lasers, blasting agents, and explosives
13.7.5.5.2 The authority having jurisdiction shall be permitted to allow the limited use of any items specified in 13.7.5.5.1 under special circumstances.
13.7.5.6 **Alternatives.** See Section 1.4.

**13.7.6** **Crowd Managers.**
13.7.6.1 Assembly occupancies shall be provided with a minimum of one trained crowd manager or crowd manager supervisor. Where the occupant load exceeds 250, additional trained crowd managers or crowd manager supervisors shall be provided at a ratio of one crowd manager or crowd manager supervisor for every 250 occupants, unless otherwise permitted by one of the following:
   (1) This requirement shall not apply to assembly occupancies used exclusively for religious worship with an occupant load not exceeding 2,000.
   (2) The ratio of trained crowd managers to occupants shall be permitted to be reduced where, in the opinion of the authority having jurisdiction (AHJ), the existence of an approved, supervised automatic sprinkler system and the nature of the event warrant.
13.7.6.2 The crowd manager and crowd manager supervisor shall receive approved training in crowd management techniques.

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13.7.6.3 Duties and responsibilities for the crowd manager and crowd manager supervisor shall be documented within a written emergency plan as required by 13.7.13.
13.7.6.4 The training for the duties and responsibilities of crowd managers shall include the following:
   (1) Role and responsibilities of the crowd manager
   (2) Understanding hazards that can endanger public assembly
   (3) Understanding and managing crowds
   (4) Introduction to fire safety and fire safety equipment
   (5) Understanding methods of evacuation and movement
   (6) Introduction to the venue
   (7) Understanding venue services, policies, and procedures
   (8) Understanding the venue’s emergency response and evacuation plan and shelter-in-place procedures.
   (9) Familiarization with the venue and guest services training
   (10) Other specific event-warranted training
13.7.6.5 The training for the duties and responsibilities of crowd manager supervisors shall include the following:
   (1) The duties described in 13.7.6.4
   (2) Role and responsibilities of the crowd manager supervisor
   (3) Understanding of incident management procedures

(4) Demonstrate understanding of the venue’s layout and design

(5) Introduction to the venue’s command structure

13.7.7* Drills.
13.7.7.1 The employees or attendants of assembly occupancies shall be trained and drilled in the duties they are to perform in case of fire, panic, or other emergency to effect orderly exiting.
13.7.7.2 Employees or attendants of assembly occupancies shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment where provided.
13.7.7.3* In the following assembly occupancies, an audible announcement shall be made, or a projected image shall be shown, prior to the start of each program that notifies occupants of the location of the exits to be used in case of a fire or other emergency:
(1) Theaters
(2) Motion picture theaters
(3) Auditoriums
(4) Other similar assembly occupancies with occupant loads exceeding 300 where there are noncontinuous programs

13.7.7.4 The requirement of 13.7.7.3 shall not apply to assembly occupancies in schools where used for nonpublic events.

13.7.8 Smoking.
13.7.8.1 Smoking in assembly occupancies shall be regulated by the authority having jurisdiction.
13.7.8.2 In rooms or areas where smoking is prohibited, plainly visible signs shall be posted that read as follows:

   NO SMOKING

13.7.8.3 No person shall smoke in prohibited areas that are so posted, unless permitted by the authority having jurisdiction under both of the following conditions:
(1) Smoking shall be permitted on a stage only where it is a necessary and rehearsed part of a performance.
(2) Smoking shall be permitted only where the smoker is a regular performing member of the cast.

13.7.8.4 Where smoking is permitted, suitable ashtrays or receptacles shall be provided in convenient locations.

13.7.9 Seating.
13.7.9.1 Secured Seating.
13.7.9.1.1 Seats in assembly occupancies accommodating more than 200 persons shall be securely fastened to the floor, except where fastened together in groups of not less than three and as permitted by 13.7.9.1.2 and 13.7.9.2.
13.7.9.1.2 Balcony and box seating areas that are separated from other areas by rails, guards, partial-height walls, or other physical barriers and have a maximum of 14 seats shall be exempt from the requirement of 13.7.9.1.1.

13.7.9.2 Unsecured Seating.
13.7.9.2.1 Seats not secured to the floor shall be permitted in restaurants, night clubs, and other occupancies where fastening seats to the floor might be impracticable.
13.7.9.2.2 Unsecured seats shall be permitted, provided that, in the area used for seating, excluding such areas as dance floors and stages, there is not more than one seat for each 15 ft² (1.4 m²) of net floor area, and adequate aisles to reach exits are maintained at all times.
13.7.9.2.3 Seating diagrams shall be submitted for approval by the authority having jurisdiction to permit an increase in occupant load per 7.3.1.3.

13.7.9.3 Occupant Load Posting.
13.7.9.3.1 Every room constituting an assembly occupancy and not having fixed seats shall have the occupant load of the room posted in a conspicuous place near the main exit from the room.
13.7.9.3.2 Approved signs shall be maintained in a legible manner by the owner or authorized agent.
13.7.9.3.3 Signs shall be durable and shall indicate the number of occupants permitted for each room use.

13.7.10 Maintenance of Outdoor Grandstands.
13.7.10.1 The owner shall provide for not less than annual inspection and required maintenance of each outdoor grandstand to ensure safe conditions.
13.7.10.2 At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.
13.7.10.3 Where required by the authority having jurisdiction, the owner shall provide a copy of the inspection report and certification that the inspection required by 13.7.10.2 has been performed.

13.7.11 Maintenance and Operation of Folding and Telescopic Seating.
13.7.11.1 Instructions in both maintenance and operation shall be transmitted to the owner by the manufacturer of the seating or his or her representative.
13.7.11.2 Maintenance and operation of folding and telescopic seating shall be the responsibility of the owner or his or her duly authorized representative and shall include all of the following:
   (1) During operation of the folding and telescopic seats, the opening and closing shall be supervised by responsible personnel who shall ensure that the operation is in accordance with the manufacturer’s instructions.
   (2) Only attachments specifically approved by the manufacturer for the specific installation shall be attached to the seating.
   (3) An annual inspection and required maintenance of each grandstand shall be performed to ensure safe conditions.
   (4) At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.

13.7.12 Clothing. Clothing and personal effects shall not be stored in corridors, and spaces not separated from corridors, unless otherwise permitted by one of the following:
   (1) This requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by an approved automatic sprinkler system in accordance with Section 9.7.
   (2) This requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by a smoke detection system in accordance with Section 9.6.
   (3) This requirement shall not apply to storage in metal lockers, provided that the required egress width is maintained.

13.7.13.1 Emergency plans emergency action plans shall be provided in accordance with Section 4.8.
13.7.13.2 Where assembly occupancies are located in the high-rise portion of a building, the emergency plan emergency action plan shall include egress procedures, methods, and preferred evacuation routes for each event considered to be a life safety hazard that could impact the building, including the appropriateness of the use of elevators.

A.12.1.2 Assembly occupancy requirements should be determined on a room-by-room basis, a floor-by-floor basis, and a total building basis. The requirements for each room should be based on the occupant load of that room, and the requirements for each floor should be based on the occupant load of that floor, but the requirements for the assembly building overall should be based on the total occupant load. Therefore, it is quite feasible to have several assembly occupancies with occupant loads of 300 or less grouped together in a single building. Such a building would be an assembly occupancy with an occupant load of over 1000.

A.12.1.3.23 For example, an assembly room for the residents of a detention occupancy will not normally be subject to simultaneous occupancy.
A.12.1.4.2 An understanding of the term accessory room might be useful to the enforcer of the Code, although the term is not used within the Code. An accessory room includes a dressing room, the property master’s work and storage rooms, the carpenter’s room, or similar rooms necessary for legitimate stage operations.

A.12.1.7.1 The increase in occupant load above that calculated using occupant load factors from Table 7.3.1.2 is permitted if the provisions of 12.1.7.1 are followed. The owner or operator has the right to submit plans and to be permitted an increase in occupant load if the plans comply with the Code. The authority having jurisdiction is permitted to reject the plan for increase in occupant load if the plan is unrealistic, inaccurate, or otherwise does not properly reflect compliance with other Code requirements. It is not the intent of the provisions of 12.1.7.1 to prohibit an increase in occupant load solely on the basis of exceeding the limits calculated using occupant load factors from Table 7.3.1.2.

To assist in preventing serious overcrowding incidents in sports arenas, stadia, and similar occupancies, spectator standing room should not be permitted between the seating areas and the playing areas, except in horse race and dog track facilities.

Where a capacity or near-capacity audience is anticipated, all seating should be assigned with tickets showing the section, row, and seat number.

Where standing room is permitted, the capacity of the standing area should meet the following criteria:

1. The capacity should be determined on the basis of 5 ft² (0.46 m²) per person.
2. The capacity should be added to the seating capacity in determining egress requirements.
3. The capacity should be located to the rear of the seating area.
4. The capacity should be assigned standing-room-only tickets according to the area designated for the purpose.

The number of tickets sold, or otherwise distributed, should not exceed the aggregate number of seats plus the approved standing room numbers.

A.12.2.3.1(1) The seating plan and the means of egress should be reviewed each time the seating is substantially rearranged.

A.12.2.3.2 The provisions of 12.2.3.2 should be applied within the audience seating chamber and to the room doors. The capacity of means of egress components encountered after leaving the audience seating chamber, such as concourses, lobbies, exit stair enclosures, and the exit discharge, should be calculated in accordance with Section 7.3.

A.12.2.6.6 The original Code wording exempted sports arenas and railway stations. If an assembly occupancy was not similar to a sports arena or railway station, it was often judged ineligible to use the provision of 12.2.6.6. A list of exempted assembly venues also raises the question of why other occupancies are not included and necessitates additions to the list. For example, an exhibit hall of very large size might have several main entrances/ exits. A theater extending the width of a block cannot really have a main entrance/exit in one confined location. A restaurant might have a main entrance serving the parking lot and another main entrance for those entering from the street. The authority having jurisdiction needs to determine where such arrangements are acceptable.

A.12.2.4 It is not the intent to require four means of egress from each level of an assembly occupancy building having a total occupant load of more than 1000 where, individually, the floors have occupant loads of less than 1000.

A.12.2.5.4.2 This requirement and the associated requirement of 12.2.5.4.3 have the effect of prohibiting festival seating, unless it truly is a form of seating, such as lawn seating, where generous spaces are commonly maintained between individuals and small groups so that people can circulate freely at any time. Such lawn seating is characterized by densities of about one person per 15 ft² (1.4 m²). Both requirements prohibit uncontrolled crowd situations, such as in front of stages at rock
music concerts where the number and density of people is uncontrolled by architectural or management features.

A.12.2.5.4.3 This requirement is intended to facilitate rapid emergency access to individuals who are experiencing a medical emergency, especially in the case of cardiopulmonary difficulties, where there is a need for rapid medical attention from trained personnel. The requirement also addresses the need for security and law enforcement personnel to reach individuals whose behavior is endangering themselves and others.

A.12.2.5.4.4 The catchment area served by an aisle accessway or aisle is the portion of the total space that is naturally served by the aisle accessway or aisle. Hence, the requirement for combining the required capacity where paths converge is, in effect, a restatement of the idea of a catchment area. The establishment of catchment areas should be based on a balanced use of all means of egress, with the number of persons in proportion to egress capacity.

A.12.2.5.5 For purposes of the means of egress requirements of this Code, tablet-arm chair seating is not considered seating at tables. Dinner theater–style configurations are required to comply with the aisle accessway provisions applying to seating at tables and the aisle requirements of 12.2.5.6, if the aisles contain steps or are ramped. Generally, if aisles contain steps or are ramped, all of the Code requirements for aisles, stairs, and ramps are required to be met. (See also 7.1.7 and A.7.1.7.2.)

A.12.2.5.5.1 Seats having reclining backs are assumed to be in their most upright position when unoccupied.

A.12.2.5.5.5 A.12.2.5.5.4 The system known as continental seating has one pair of egress doors provided for every five rows that is located close to the ends of the rows. In previous editions of the Code, such egress doors were required to provide a clear width of not less than 66 in. (1675 mm) discharging into a foyer, into a lobby, or to the exterior of the building. This continental seating arrangement can result in egress flow times (i.e., with nominal flow times of approximately 100 seconds, rather than 200 seconds) that are approximately one-half as long as those resulting where side aisles lead to more remote doors. Such superior egress flow time performance is desirable in some situations; however, special attention should be given either to a comparably good egress capacity for other parts of the egress system or to sufficient space to accommodate queuing outside the seating space.

A.12.2.5.6.3 It is the intent to permit handrails to project not more than 3½ in. (90 mm) into the clear width of aisles required by 12.2.5.6.3.

A.12.2.5.6.4.1 Technical information about the convenience and safety of ramps and stairs having gradients in the region of 1 in 8 clearly suggests that the goal should be slopes for ramps that are less steep and combinations of stair risers and treads that are, for example, superior to 4 in. (100 mm) risers and 32 in. (865 mm) treads. This goal should be kept in mind by designers in establishing the gradient of seating areas to be served by aisles.

A.12.2.5.6.4.2 Landings for aisle stairs should not be required.

A.12.2.5.6.5(3) Tread depth is more important to stair safety than is riser height. Therefore, in cases where the seating area gradient is less than 5 in 11, it is recommended that the tread dimension be increased beyond 11 in. (280 mm), rather than reducing the riser height. Where the seating area
gradient exceeds 8 in 11, it is recommended that the riser height be increased while maintaining a

tread depth of not less than 11 in. (280 mm).

A.12.2.5.6.8 Failure to provide a handrail within a 30 in. (760 mm) horizontal distance of all required
portions of the aisle stair width means that the egress capacity calculation is required to be modified
as specified by 12.2.3.3(3). This modification might lead to an increase in the aisle width. Although
this increase will compensate for reduced egress efficiency, it does not help individuals walking on
such portions of stairs to recover from missteps, other than by possibly marginally reducing the

crowding that might exacerbate the problem of falls. (See also 7.2.2.4.)

A.12.2.5.6.9 Certain tread cover materials such as plush carpets, which are often used in theaters,
produce an inherently well-marked tread nosing under most lighting conditions. On the other hand,
concrete treads have nosings with a sharp edge and, especially under outdoor lighting conditions, are
difficult to discriminate. Therefore, concrete treads require an applied marking stripe. The slip
resistance of such marking stripes should be similar to the rest of the treads, and no tripping hazard
should be created; luminescent, self-luminous, and electroluminescent tread markings have the
advantage of being apparent in reduced light or in the absence of light.

A.12.2.5.7 For purposes of the means of egress requirements of this Code, seating at counters or at
other furnishings is considered to be the same as seating at tables.

A.12.2.5.7.2 Effectively, where the aisle accessway is bounded by movable seating, the 12 in. (305
mm) minimum width might be increased by about 15 in. to 30 in. (380 mm to 760 mm) as seating is
pushed in toward tables. Moreover, it is such movement of chairs during normal and emergency
egress situations that makes the zero-clearance allowance workable. The allowance also applies to
booth seating where people sitting closest to the aisle normally move out ahead of people farthest
from the aisle.

A.12.2.5.7.3 See A.12.2.5.8.3.

A.12.2.5.7.4 The minimum width requirement as a function of accessway length is as follows:

(1) 0 in. (0 mm) for the first 6 ft (1830 mm) of length toward the exit

(2) 12 in. (305 mm) for the next 6 ft (1830 mm); that is, up to 12 ft (3660 mm) of length

(3) 12 in. to 24 in. (305 mm to 610 mm) for lengths from 12 ft to 36 ft (3.7 m to 11 m), the

maximum length to the closest aisle or egress doorway permitted by 12.2.5.7.5

Any additional width needed for seating is to be added to these widths, as described in 12.2.5.8.3.

A.12.2.5.8.1 See 7.1.7 and A.7.1.7.2 for special circulation safety precautions applicable where
small elevation differences occur.

A.12.2.5.8.2 It is important to make facilities accessible to people using wheelchairs. See ICC/ANSI
A117.1, American National Standard for Accessible and Usable Buildings and Facilities, which
provides guidance on appropriate aisle widths.

A.12.2.5.8.3 Figure A.12.2.5.8.3 shows typical measurements involving seating and tables abutting
an aisle. For purposes of the means of egress requirements of this Code, seating at counters or other
furnishings is considered to be the same as seating at tables.
A.12.2.11.1.1 This requirement includes provisions of guards and rails at the front of boxes, galleries, and balconies, and at aisle accessways adjacent to vomitories and orchestra pits.

A.12.2.11.1.6.2 The written plan should identify the unguarded areas and should include precautions and provisions to mitigate the fall hazard. Such precautions and provisions might include the following:

1. Training
2. Choreography
3. Blocking
4. Rehearsal
5. Restricted access to the stage
6. Restricted access to unguarded edges
7. Warning lights
8. Audible warnings
9. Tactile edges
10. Warning barriers
11. Signage
12. Temporary barriers
13. Personal fall protection
14. Fall restraint
15. Spotters

A.12.3.1(1) The allowance for unenclosed stairs or ramps presumes the balcony or mezzanine complies with the other provisions of the Code, such as travel distance to exits in accordance with 12.2.6 and number of exits in accordance with 12.2.4. For the purposes of this exception, a balcony with glazing that provides a visual awareness of the main assembly area is considered open.

A.12.3.4.2.3 The intent is to require detectors only in nonsprinklered hazardous areas that are unoccupied. When the building is occupied, the detectors in the unoccupied, unsprinklered hazardous areas will initiate occupant notification. If the building is unoccupied, the fire in the nonsprinklered hazardous area is not a life safety issue, and the detectors, upon activation, are not required to notify anyone. The signal from a detector is permitted to be sent to a control panel in an area that is occupied when the building is occupied, but that is unoccupied when the building is unoccupied, without the need for central station monitoring or the equivalent.
A.12.3.4.3.5 Examples of devices that might be used to provide alternative visible means include scoreboards, message boards, and other electronic devices.

A.12.3.5.3(1) It is the intent to permit a single multipurpose room of less than 12,000 ft² (1115 m²) to have certain small rooms as part of the single room. These rooms could be a kitchen, an office, an equipment room, and the like. It is also the intent that an addition could be made to an existing building, without requiring that the existing building be sprinklered, where both the new and existing buildings have independent means of egress and a fire-rated separation is provided to isolate one building from the other.

A school gymnasium with egress independent of, and separated from, the school would be included in this exception, as would a function hall attached to a church with a similar egress arrangement.

A.12.3.5.3(3) Examples of low fire hazard uses include spectator sporting events, concerts, and performances on platforms.

The following uses are not low fire hazard uses: concerts and performances on stages; tradeshows; exhibitions and display of combustible items; displays of vehicles, boats, or similar items; or events using open flames or pyrotechnic effects.

A.12.4.1.1 Life safety evaluations are examples of performance-based approaches to life safety. In this respect, significant guidance in the form and process of life safety evaluations is provided by Chapter 5, keeping in mind the fire safety emphasis in Chapter 5. Performance criteria, scenarios, evaluation, safety factors, documentation, maintenance, and periodic assessment (including a warrant of fitness) all apply to the broader considerations in a life safety evaluation. A life safety evaluation deals not only with fire but also with storms, collapse, crowd behavior, and other related safety considerations for which a checklist is provided in A.12.4.1.3. Chapter 5 provides guidance, based on fire safety requirements, for establishing a documented case showing that products of combustion in all conceivable fire scenarios will not significantly endanger occupants using means of egress in the facility (e.g., due to fire detection, automatic suppression, smoke control, large-volume space, or management procedures). Moreover, means of egress facilities plus facility management capabilities should be adequate to cope with scenarios where certain egress routes are blocked for some reason.

In addition to making realistic assumptions about the capabilities of persons in the facility (e.g., an assembled crowd including many disabled persons or persons unfamiliar with the facility), the life safety evaluation should include a factor of safety of not less than 2.0 in all calculations relating to hazard development time and required egress time (the combination of flow time and other time needed to detect and assess an emergency condition, initiate egress, and move along the egress routes). The factor of safety takes into account the possibility that half of the egress routes might not be used (or be usable) in certain situations.

Regarding crowd behavior, the potential hazards created by larger masses of people and greater crowd densities (which can be problematic during ingress, occupancy, and egress) demand that technology be used by designers, managers, and authorities responsible for buildings to compensate for the relaxed egress capacity provisions of Table 12.4.2.3. In very large buildings for assembly use, the hazard of crowd crushes can exceed that of fire or structural failure. Therefore, the building designers, managers, event planners, security personnel, police authorities, and fire authorities, as well as the building construction authorities, should understand the potential problems and solutions, including coordination of their activities. For crowd behavior, this understanding includes factors of space, energy, time, and information, as well as specific crowd management techniques, such as metering. Published guidance on these factors and techniques is found in the SFPE Handbook of Fire.
Table 12.2.3.2 and Table 12.4.2.3 are based on a linear relationship between number of seats and nominal flow time, with not less than 200 seconds (3.3 minutes) for 2000 seats plus 1 second for every additional 50 seats up to 25,000. Beyond 25,000 total seats, the nominal flow time is limited to 660 seconds (11 minutes). Nominal flow time refers to the flow time for the most able group of patrons; some groups less familiar with the premises or less able groups might take longer to pass a point in the egress system. Although three or more digits are noted in the tables, the resulting calculations should be assumed to provide only two significant figures of precision.

A.12.4.1.3 Factors to be considered in a life safety evaluation include the following:

(1) Nature of the events being accommodated, including the following:
   (a) Ingress, intra-event movement, and egress patterns
   (b) Ticketing and seating policies/practices
   (c) Event purpose (e.g., sports contest, religious meeting)
   (d) Emotional qualities (e.g., competitiveness) of event
   (e) Time of day when event is held
   (f) Time duration of single event
   (g) Time duration of attendees’ occupancy of the building

(2) Occupant characteristics and behavior, including the following:
   (a) Homogeneity
   (b) Cohesiveness
   (c) Familiarity with building
   (d) Familiarity with similar events
   (e) Capability (as influenced by factors such as age, physical abilities)
   (f) Socioeconomic factors
   (g) Small minority involved with recreational violence
   (h) Emotional involvement with the event and other occupants
   (i) Use of alcohol or drugs
   (j) Food consumption
   (k) Washroom utilization

(3) Management, including the following:
   (a) Clear, contractual arrangements for facility operation/use as follows:
      i. Between facility owner and operator
      ii. Between facility operator and event promoter
      iii. Between event promoter and performer
      iv. Between event promoter and attendee
      v. With police forces
      vi. With private security services
      vii. With ushering services
   (b) Experience with the building
   (c) Experience with similar events and attendees
   (d) Thorough, up-to-date operations manual
   (e) Training of personnel
   (f) Supervision of personnel
   (g) Communications systems and utilization
   (h) Ratios of management and other personnel to attendees
   (i) Location/distribution of personnel
   (j) Central command location
(k) Rapport between personnel and attendees
(l) Personnel support of attendee goals
(m) Respect of attendees for personnel due to the following:
   i. Dress (uniform) standards
   ii. Age and perceived experience
   iii. Personnel behavior, including interaction
   iv. Distinction between crowd management and control
   v. Management concern for facility quality (e.g., cleanliness)
   vi. Management concern for entire event experience of attendees (i.e., not just during occupancy of the building)
(4) Emergency management preparedness, including the following:
   (a) Complete range of emergencies addressed in operations manual
   (b) Power loss
   (c) Fire
   (d) Severe weather
   (e) Earthquake
   (f) Crowd incident
   (g) Terrorism
   (h) Hazardous materials
   (i) Transportation accident (e.g., road, rail, air)
   (j) Communications systems available
   (k) Personnel and emergency forces ready to respond
   (l) Attendees clearly informed of situation and proper behavior
(5) Building systems, including the following:
   (a) Structural soundness
   (b) Normal static loads
   (c) Abnormal static loads (e.g., crowds, precipitation)
   (d) Dynamic loads (e.g., crowd sway, impact, explosion, wind, earthquake)
   (e) Stability of nonstructural components (e.g., lighting)
   (f) Stability of movable (e.g., telescoping) structures
   (g) Fire protection
   (h) Fire prevention (e.g., maintenance, contents, housekeeping)
   (i) Compartmentation
   (j) Automatic detection and suppression of fire
   (k) Smoke control
   (l) Alarm and communications systems
   (m) Fire department access routes and response capability
   (n) Structural integrity
   (o) Weather protection
   (p) Wind
   (q) Precipitation (attendees rush for shelter or hold up egress of others)
   (r) Lightning protection
   (s) Circulation systems
   (t) Flowline or network analysis
   (u) Waywinding and orientation
   (v) Merging of paths (e.g., precedence behavior)
   (w) Decision/branching points
   (x) Route redundancies
(y) Counterflow, crossflow, and queuing situations
(z) Control possibilities, including metering
(aa) Flow capacity adequacy
(bb) System balance
(cc) Movement time performance
(dd) Flow times
(ee) Travel times
(ff) Queuing times
(gg) Route quality
(hh) Walking surfaces (e.g., traction, discontinuities)
(ii) Appropriate widths and boundary conditions
(jj) Handrails, guardrails, and other rails
(kk) Ramp slopes
(ll) Step geometries
(mm) Perceptual aspects (e.g., orientation, signage, marking, lighting, glare, distractions)
(nn) Route choices, especially for vertical travel
(oo) Resting/waiting areas
(pp) Levels of service (overall crowd movement quality)
(qq) Services
(rr) Washroom provision and distribution
(ss) Concessions
(tt) First aid and EMS facilities
(uu) General attendee services

A scenario-based approach to performance-based fire safety is addressed in Chapter 5. In addition to using such scenarios and, more generally, the attention to performance criteria, evaluation, safety factors, documentation, maintenance, and periodic assessment required when the Chapter 5 option is used, life safety evaluations should consider scenarios based on characteristics important in assembly occupancies. These characteristics include the following:

1. Whether there is a local or mass awareness of an incident, event, or condition that might provoke egress
2. Whether the incident, event, or condition stays localized or spreads
3. Whether or not egress is desired by facility occupants
4. Whether there is a localized start to any egress or mass start to egress
5. Whether exits are available or not available

Examples of scenarios and sets of characteristics that might occur in a facility follow.

Scenario 1. Characteristics: mass start, egress desired (by management and attendees), exits not available, local awareness.

Normal egress at the end of an event occurs just as a severe weather condition induces evacuees at the exterior doors to retard or stop their egress. The backup that occurs in the egress system is not known to most evacuees, who continue to press forward, potentially resulting in a crowd crush.

Scenario 2. Characteristics: mass start, egress not desired (by management), exits possibly not available, mass awareness.

An earthquake occurs during an event. The attendees are relatively safe in the seating area. The means of egress outside the seating area are relatively unsafe and vulnerable to aftershock damage. Facility management discourages mass egress until the means of egress can be checked and cleared for use.

Scenario 3. Characteristics: local start, incident stays local, egress desired (by attendees and management), exits available, mass awareness.
A localized civil disturbance (e.g., firearms violence) provokes localized egress, which is seen by attendees, generally, who then decide to leave also.  

**Scenario 4.** Characteristics: mass start, egress desired (by attendees), incident spreads, exits not available, mass awareness.

In an open-air facility unprotected from wind, precipitation, and lightning, sudden severe weather prompts egress to shelter, but not from the facility. The means of egress congest and block quickly as people in front stop once they are under shelter, while people behind them continue to press forward, potentially resulting in a crowd crush.  

These scenarios illustrate some of the broader factors to be taken into account when assessing the capability of both building systems and management features on which reliance is placed in a range of situations, not just fire emergencies. Some scenarios also illustrate the conflicting motivations of management and attendees, based on differing perceptions of danger and differing knowledge of hazards, countermeasures, and capabilities. Mass egress might not be the most appropriate life safety strategy in some scenarios, such as Scenario 2.  

Table A.12.4.1.3 summarizes the characteristics in the scenarios and provides a framework for developing other characteristics and scenarios that might be important for a particular facility, hazard, occupant type, event, or management.

<table>
<thead>
<tr>
<th>Table A.12.4.1.3 Life Safety Evaluation Scenario Characteristics Matrix</th>
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<tbody>
<tr>
<td><strong>Man management</strong></td>
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<tr>
<td><strong>Scenario</strong></td>
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<tr>
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**A.12.4.2** Outdoor facilities are not accepted as inherently smoke-protected but must meet the requirements of smoke-protected assembly seating in order to utilize the special requirements for means of egress.

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**A.12.4.2.1(1)(b)** The engineering analysis should be part of the life safety evaluation required by 12.4.1.

**A.12.4.5.12** Prior editions of the Code required stages to be protected by a Class III standpipe system in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*. NFPA 14 requires that Class II and Class III standpipes be automatic — not manual — because they are intended to be used by building occupants. Automatic standpipe systems are required to provide not less than 500 gpm (1890 L/min) at 100 psi (689 kN/m²). This requirement often can be met only if a fire pump is installed. Installation of a fire pump presents an unreasonable burden for the system supplying the two hose outlets at the side of the stage. The revised wording of 12.4.5.12 offers some
relief by permitting the hose outlets to be in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

A.12.4.7 Where a special amusement building is installed inside another building, such as within an exhibit hall, the special amusement building requirements apply only to the special amusement building. For example, the smoke detectors required by 12.4.7.4 are not required to be connected to the building’s system. Where installed in an exhibit hall, such smoke detectors are also required to comply with the provisions applicable to an exhibit.

A.12.4.7.1 The aggregate horizontal projections of a multilevel play structure are indicative of the number of children who might be within the structure and at risk from a fire or similar emergency. The word “aggregate” is used in recognition of the fact that the platforms and tubes that make up the multilevel play structure run above each other at various levels. In calculating the area of the projections, it is important to account for all areas that might be expected to be occupied within, on top of, or beneath the components of the structure when the structure is used for its intended function.

A.12.4.7.2 See A.12.4.7.1.

A.12.4.7.7.3 Consideration should be given to the provision of directional exit marking on or adjacent to the floor.

A.12.4.10.2(2) Delayed-egress locks on doors from the airport loading walkway into the airport terminal building might compromise life safety due to the limited period of time the airport loading walkway will provide protection for emergency egress. The requirement of 12.4.10.2(2) would not limit the use of access-controlled or delayed-egress hardware from the airport terminal building into the airport loading walkway.
A.12.7.6.2 Crowd managers and crowd manager supervisors need to clearly understand the required duties and responsibilities specific to the venue’s emergency plan. The crowd management training program should include a clear appreciation of crowd dynamics factors including space, energy, time, and information, as well as specific crowd management techniques, such as metering. Training should involve specific actions necessary during normal and emergency operations, and include an assessment of people-handling capabilities of a space prior to its use, the identification of hazards, an evaluation of projected levels of occupancy, the adequacy of means of ingress and egress and identification of ingress and egress barriers, the processing procedures such as ticket collection, and the expected types of human behavior. Training should also involve the different types of emergency evacuations and, where required by the emergency plan, relocation and shelter-in-place operations, and the challenges associated with each.

A.12.7.7 It is important that an adequate number of competent attendants is on duty at all times when the assembly occupancy is occupied.

A.12.7.7.3 It is not the intent of this provision to require an announcement in bowling alleys, cocktail lounges, restaurants, or places of worship.

A.13.1.2 Assembly occupancy requirements should be determined on a room-by-room basis, a floor-by-floor basis, and a total building basis. The requirements for each room should be based on the occupant load of that room, and the requirements for each floor should be based on the occupant load of that floor, but the requirements for the assembly building overall should be based on the total occupant load. Therefore, it is quite feasible to have several assembly occupancies with occupant loads of 300 or less grouped together in a single building. Such a building would be an assembly occupancy with an occupant load of over 1000.

A.13.1.3.2 For example, an assembly room for the residents of a detention occupancy will not normally be subject to simultaneous occupancy.

A.13.1.4.2 An understanding of the term accessory room might be useful to the enforcer of the Code, although the term is not used within the Code. An accessory room includes a dressing room, the property master’s work and storage rooms, the carpenter’s room, or similar rooms necessary for legitimate stage operations.

A.13.1.7.1 The increase in occupant load above that calculated using occupant load factors from Table 7.3.1.2 is permitted if the provisions of 13.1.7.1 are followed. The owner or operator has the right to submit plans and to be permitted an increase in occupant load if the plans comply with the Code. The authority having jurisdiction is permitted to reject the plan for increase in occupant load if the plan is unrealistic, inaccurate, or otherwise does not properly reflect compliance with other Code requirements. It is not the intent of the provisions of 13.1.7.1 to prohibit an increase in occupant load solely on the basis of exceeding the limits calculated using occupant load factors from Table 7.3.1.2.

Existing auditorium and arena structures might not be designed for the added occupant load beyond the fixed seating. The authority having jurisdiction should consider exit access and aisles before permitting additional occupant load in areas using seating such as festival seating or movable seating on the auditorium or arena floor area.

To assist in preventing serious overcrowding incidents in sports arenas, stadia, and similar occupancies, spectator standing room should not be permitted between the seating areas and the playing areas, except in horse race and dog track facilities.

Where a capacity or near-capacity audience is anticipated, all seating should be assigned with tickets showing the section, row, and seat number.

Where standing room is permitted, the capacity of the standing area should meet the following criteria:

1. The capacity should be determined on the basis of 5 ft² (0.46 m²) per person.
2. The capacity should be added to the seating capacity in determining egress requirements.
(3) The capacity should be located to the rear of the seating area.
(4) The capacity should be assigned standing-room-only tickets according to the area designated for the purpose.

The number of tickets sold, or otherwise distributed, should not exceed the aggregate number of seats plus the approved standing room numbers.

A.13.2.2.3.1(1) The seating plan and the means of egress should be reviewed each time the seating is substantially rearranged.

A.13.2.3.2 The provisions of 13.2.3.2 should be applied within the audience seating chamber and to the room doors. The capacity of means of egress components encountered after leaving the audience seating chamber, such as concourses, lobbies, exit stair enclosures, and the exit discharge, should be calculated in accordance with Section 7.3.

A.13.2.3.6.6 The original Code wording exempted sports arenas and railway stations. If an assembly occupancy was not similar to a sports arena or railway station, it was often judged ineligible to use the provision of 13.2.3.6.6. A list of exempted assembly venues also raises the question of why other occupancies are not included and necessitates additions to the list. For example, an exhibit hall of very large size might have several main entrances/exits. A theater extending the width of a block cannot really have a main entrance/exit in one confined location. A restaurant might have a main entrance serving the parking lot and another main entrance for those entering from the street. The authority having jurisdiction needs to determine where such arrangements are acceptable.

A.13.2.4 It is not the intent to require four means of egress from each level of an assembly occupancy building having a total occupant load of more than 1000 where, individually, the floors have occupant loads of less than 1000.

A.13.2.5.4.2 This requirement and the associated requirement of 13.2.5.4.3 have the effect of prohibiting festival seating, unless it truly is a form of seating, such as lawn seating, where generous spaces are commonly maintained between individuals and small groups so that people can circulate freely at any time. Such lawn seating is characterized by densities of about one person per 15 ft² (1.4 m²). Both requirements prohibit uncontrolled crowd situations, such as in front of stages at rock music concerts where the number and density of people is uncontrolled by architectural or management features.

A.13.2.5.4.3 This requirement is intended to facilitate rapid emergency access to individuals who are experiencing a medical emergency, especially in the case of cardiopulmonary difficulties, where there is a need for rapid medical attention from trained personnel. The requirement also addresses the need for security and law enforcement personnel to reach individuals whose behavior is endangering themselves and others.

A.13.2.5.4.4 The catchment area served by an aisle accessway or aisle is the portion of the total space that is naturally served by the aisle accessway or aisle. Hence, the requirement for combining the required capacity where paths converge is, in effect, a restatement of the idea of a catchment area. The establishment of catchment areas should be based on a balanced use of all means of egress, with the number of persons in proportion to egress capacity.

A.13.2.5.5 For purposes of the means of egress requirements of this Code, tablet-arm chair seating is not considered seating at tables. Dinner theater–style configurations are required to comply with the aisle accessway provisions applying to seating at tables and the aisle requirements of 13.2.5.6, if the aisles contain steps or are ramped. Generally, if aisles contain steps or are ramped, all of the Code requirements for aisles, stairs, and ramps are required to be met. (See Also see 7.1.7 and A.7.1.7.2.)
A.13.2.5.5.1 Seats having reclining backs are assumed to be in their most upright position when unoccupied.

A.13.2.5.5 A.13.2.5.4 The system known as continental seating has one pair of egress doors provided for every five rows that is located close to the ends of the rows. In previous editions of the Code, such egress doors were required to provide a clear width of not less than 66 in. (1675 mm) discharging into a foyer, into a lobby, or to the exterior of the building. This continental seating arrangement can result in egress flow times (i.e., with nominal flow times of approximately 100 seconds, rather than 200 seconds) that are approximately one-half as long as those resulting where side aisles lead to more remote doors. Such superior egress flow time performance is desirable in some situations; however, special attention should be given either to a comparably good egress capacity for other parts of the egress system or to sufficient space to accommodate queuing outside the seating space.

A.13.2.5.6.3 It is the intent to permit handrails to project not more than 3½ in. (90 mm) into the clear width of aisles required by 13.2.5.6.3.

A.13.2.5.6.4.1 Technical information about the convenience and safety of ramps and stairs having gradients in the region of 1 in 8 clearly suggests that the goal should be slopes for ramps that are less steep and combinations of stair risers and treads that are, for example, superior to 4 in. (100 mm) risers and 32 in. (865 mm) treads. This goal should be kept in mind by designers in establishing the gradient of seating areas to be served by aisles.

A.13.2.5.6.4.2 Landings for aisle stairs should not be required.

A.13.2.5.6.5(3) Tread depth is more important to stair safety than is riser height. Therefore, in cases where the seating area gradient is less than 5 in 11, it is recommended that the tread dimension be increased beyond 11 in. (280 mm), rather than reducing the riser height. Where the seating area gradient exceeds 8 in 11, it is recommended that the riser height be increased while maintaining a tread depth of not less than 11 in. (280 mm).

A.13.2.5.6.5(5) Completely uniform tread dimensions are preferred over aisle stair designs where tread depths alternate between relatively small intermediate treads between seating platforms and relatively large treads at seating platforms. A larger tread that is level with the seating platform is not needed to facilitate easy access to, and egress from, a row of seating. If this arrangement is used, it is important to provide a tread depth that is better than minimum for the intermediate tread; hence, 13 in. (330 mm) is specified. Where nonuniformities exist due to construction tolerance, they should not exceed 3/16 in. (4.8 mm) between adjacent treads.

A.13.2.5.6.8 Failure to provide a handrail within a 30 in. (760 mm) horizontal distance of all required portions of the aisle stair width means that the egress capacity calculation is required to be modified as specified by 13.2.3.3(3). This modification might lead to an increase in the aisle width. Although this increase will compensate for reduced egress efficiency, it does not help individuals walking on such portions of stairs to recover from missteps, other than by possibly marginally reducing the crowding that might exacerbate the problem of falls. (See also 7.2.2.4.)

A.13.2.5.6.9 Certain tread cover materials such as plush carpets, which are often used in theaters, produce an inherently well-marked tread nosing under most lighting conditions. On the other hand, concrete treads have nosings with a sharp edge and, especially under outdoor lighting conditions, are difficult to discriminate. Therefore, concrete treads require an applied marking stripe. The slip resistance of such marking stripes should be similar to the rest of the treads, and no tripping hazard
should be created; luminescent, self-luminous, and electroluminescent tread markings have the advantage of being apparent in reduced light or in the absence of light.

A.13.2.5.7 For purposes of the means of egress requirements of this Code, seating at counters or at other furnishings is considered to be the same as seating at tables.

A.13.2.5.7.2 Effectively, where the aisle accessway is bounded by movable seating, the 12 in. (305 mm) minimum width might be increased by about 15 in. to 30 in. (380 mm to 760 mm) as seating is pushed in toward tables. Moreover, it is such movement of chairs during normal and emergency egress situations that makes the zero-clearance exception workable. The exception also applies to booth seating where people sitting closest to the aisle normally move out ahead of people farthest from the aisle.

A.13.2.5.7.3 See A.13.2.5.8.3.

A.13.2.5.7.4 The minimum width requirement as a function of accessway length is as follows:

1. 0 in. (0 mm) for the first 6 ft (1830 mm) of length toward the exit
2. 12 in. (305 mm) for the next 6 ft (1830 mm); that is, up to 12 ft (3660 mm) of length
3. 12 in. to 24 in. (305 mm to 610 mm) for lengths from 12 ft to 36 ft (3.7 m to 11 m), the maximum length to the closest aisle or egress doorway permitted by 13.2.5.7.5

Any additional width needed for seating is to be added to these widths, as described in 13.2.5.8.3.

A.13.2.5.8.1 See 7.1.7 and A.7.1.7.2 for special circulation safety precautions applicable where small elevation differences occur.

A.13.2.5.8.2 It is important to make facilities accessible to people using wheelchairs. See ICC/ANSI A117.1, American National Standard for Accessible and Usable Buildings and Facilities, which provides guidance on appropriate aisle widths.

A.13.2.5.8.3 Figure A.13.2.5.8.3 shows typical measurements involving seating and tables abutting an aisle. Note that, for purposes of the means of egress requirements of this Code, seating at counters or other furnishings is considered to be the same as seating at tables.

FIGURE A.13.2.5.8.3 Seating at Tables Abutting an Aisle.

A.13.3.1(1) The allowance for unenclosed stairs or ramps presumes the balcony or mezzanine complies with the other provisions of the Code, such as travel distance to exits in accordance with 13.2.6 and number of exits in accordance with 13.2.4. For the purposes of this exception, a balcony with glazing that provides a visual awareness of the main assembly area is considered open.

A.13.3.4.2.3 The intent is to require detectors only in nonsprinklered hazardous areas that are unoccupied. Where the building is occupied, the detectors in the unoccupied, unsprinklered hazardous areas will initiate occupant notification. If the building is unoccupied, the fire in the nonsprinklered hazardous area is not a life safety issue, and the detectors, upon activation, are not required to notify anyone. The signal from a detector is permitted to be sent to a control panel in an
area that is occupied when the building is occupied, but that is unoccupied when the building is unoccupied, without the need for central station monitoring or the equivalent.

**A.13.4.1.1** Life safety evaluations are examples of performance-based approaches to life safety. In this respect, significant guidance in the form and process of life safety evaluations is provided by Chapter 5, keeping in mind the fire safety emphasis in Chapter 5. Performance criteria, scenarios, evaluation, safety factors, documentation, maintenance, and periodic assessment (including a warrant of fitness) all apply to the broader considerations in a life safety evaluation. A life safety evaluation deals not only with fire but also with storms, collapse, crowd behavior, and other related safety considerations for which a checklist is provided in A.13.4.1.3. Chapter 5 provides guidance, based on fire safety requirements, for establishing a documented case showing that products of combustion in all conceivable fire scenarios will not significantly endanger occupants using means of egress in the facility (e.g., due to fire detection, automatic suppression, smoke control, large-volume space, or management procedures). Moreover, means of egress facilities plus facility management capabilities should be adequate to cope with scenarios where certain egress routes are blocked for some reason.

In addition to making realistic assumptions about the capabilities of persons in the facility (e.g., an assembled crowd including many disabled persons or persons unfamiliar with the facility), the life safety evaluation should include a factor of safety of not less than 2.0 in all calculations relating to hazard development time and required egress time (the combination of flow time and other time needed to detect and assess an emergency condition, initiate egress, and move along the egress routes). This factor of safety takes into account the possibility that half of the egress routes might not be used (or usable) in certain situations.

Regarding crowd behavior, the potential hazards created by larger masses of people and greater crowd densities (which can be problematic during ingress, occupancy, and egress) demand that technology be used by designers, managers, and authorities responsible for buildings to compensate for the relaxed egress capacity provisions of Table 13.4.2.3. In very large buildings for assembly use, the hazard of crowd crushes can exceed that of fire or structural failure. Therefore, the building designers, managers, event planners, security personnel, police authorities, and fire authorities, as well as the building construction authorities, should understand the potential problems and solutions, including coordination of their activities. For crowd behavior, this understanding includes factors of space, energy, time, and information, as well as specific crowd management techniques, such as metering. Published guidance on these factors and techniques is found in the *SFPE Handbook of Fire Protection Engineering*, Section 3, Chapter 13, pp. 3-342–3-366 (Proulx, G., “Movement of People”), and the publications referenced therein.

Table 13.2.3.2 and Table 13.4.2.3 are based on a linear relationship between number of seats and nominal flow time, with not less than 200 seconds (3.3 minutes) for 2000 seats plus 1 second for every additional 50 seats up to 25,000. Beyond 25,000 total seats, the nominal flow time is limited to 660 seconds (11 minutes). Nominal flow time refers to the flow time for the most able group of patrons; some groups less familiar with the premises or less able groups might take longer to pass a point in the egress system. Although three or more digits are noted in the tables, the resulting calculations should be assumed to provide only two significant figures of precision.

**A.13.4.1.3** Factors to be considered in a life safety evaluation might include the following:

1. Nature of the events being accommodated, including the following:
   a. Ingress, intra-event movement, and egress patterns
   b. Ticketing and seating policies/practices
   c. Event purpose (e.g., sports contest, religious meeting)
   d. Emotional qualities (e.g., competitiveness) of event
   e. Time of day when event is held
(f) Time duration of single event

(g) Time duration of attendees’ occupancy of the building

(2) Occupant characteristics and behavior, including the following:

(a) Homogeneity

(b) Cohesiveness

(c) Familiarity with building

(d) Familiarity with similar events

(e) Capability (as influenced by factors such as age, physical abilities)

(f) Socioeconomic factors

(g) Small minority involved with recreational violence

(h) Emotional involvement with the event and other occupants

(i) Use of alcohol or drugs

(j) Food consumption

(k) Washroom utilization

(3) Management, including the following:

(a) Clear, contractual arrangements for facility operation/use as follows:

i. Between facility owner and operator

ii. Between facility operator and event promoter

iii. Between event promoter and performer

iv. Between event promoter and attendee

v. With police forces

vi. With private security services

vii. With ushering services

(b) Experience with the building

(c) Experience with similar events and attendees

(d) Thorough, up-to-date operations manual

(e) Training of personnel

(f) Supervision of personnel

(g) Communications systems and utilization

(h) Ratios of management and other personnel to attendees

(i) Location/distribution of personnel

(j) Central command location

(k) Rapport between personnel and attendees

(l) Personnel support of attendee goals

(m) Respect of attendees for personnel due to the following:

i. Dress (uniform) standards

ii. Age and perceived experience

iii. Personnel behavior, including interaction

iv. Distinction between crowd management and control

v. Management concern for facility quality (e.g., cleanliness)

vi. Management concern for entire event experience of attendees (i.e., not just during occupancy of the building)

(4) Emergency management preparedness, including the following:

(a) Complete range of emergencies addressed in operations manual

(b) Power loss

(c) Fire

(d) Severe weather

(e) Earthquake
(f) Crowd incident
(g) Terrorism
(h) Hazardous materials
(i) Transportation accident (e.g., road, rail, air)
(j) Communications systems available
(k) Personnel and emergency forces ready to respond
(l) Attendees clearly informed of situation and proper behavior
(5) Building systems, including the following:
(a) Structural soundness
(b) Normal static loads
(c) Abnormal static loads (e.g., crowds, precipitation)
(d) Dynamic loads (e.g., crowd sway, impact, explosion, wind, earthquake)
(e) Stability of nonstructural components (e.g., lighting)
(f) Stability of movable (e.g., telescoping) structures
(g) Fire protection
(h) Fire prevention (e.g., maintenance, contents, housekeeping)
(i) Compartmentation
(j) Automatic detection and suppression of fire
(k) Smoke control
(l) Alarm and communications systems
(m) Fire department access routes and response capability
(n) Structural integrity
(o) Weather protection
(p) Wind
(q) Precipitation (attendees rush for shelter or hold up egress of others)
(r) Lightning protection
(s) Circulation systems
(t) Flowline or network analysis
(u) Waywinding and orientation
(v) Merging of paths (e.g., precedence behavior)
(w) Decision/branching points
(x) Route redundancies
(y) Counterflow, crossflow, and queuing situations
(z) Control possibilities, including metering
(aa) Flow capacity adequacy
(bb) System balance
(cc) Movement time performance
(dd) Flow times
(ee) Travel times
(ff) Queuing times
(gg) Route quality
(hh) Walking surfaces (e.g., traction, discontinuities)
(ii) Appropriate widths and boundary conditions
(jj) Handrails, guardrails, and other rails
(kk) Ramp slopes
(ll) Step geometries
(mm) Perceptual aspects (e.g., orientation, signage, marking, lighting, glare, distractions)
(nn) Route choices, especially for vertical travel
A scenario-based approach to performance-based fire safety is addressed in Chapter 5. In addition to utilizing such scenarios and, more generally, the attention to performance criteria, evaluation, safety factors, documentation, maintenance, and periodic assessment required when the Chapter 5 option is used, life safety evaluations should consider scenarios based on characteristics important in assembly occupancies. These characteristics include the following:

1. Whether there is a local or mass awareness of an incident, event, or condition that might provoke egress
2. Whether the incident, event, or condition stays localized or spreads
3. Whether or not egress is desired by facility occupants
4. Whether there is a localized start to any egress or mass start to egress
5. Whether exits are available or not available

Examples of scenarios and sets of characteristics that might occur in a facility follow.

**Scenario 1.** Characteristics: mass start, egress desired (by management and attendees), exits not available, local awareness.

Normal egress at the end of an event occurs just as a severe weather condition induces evacuees at the exterior doors to retard or stop their egress. The backup that occurs in the egress system is not known to most evacuees, who continue to press forward, potentially resulting in a crowd crush.

**Scenario 2.** Characteristics: mass start, egress not desired (by management), exits possibly not available, mass awareness.

An earthquake occurs during an event. The attendees are relatively safe in the seating area. The means of egress outside the seating area are relatively unsafe and vulnerable to aftershock damage. Facility management discourages mass egress until the means of egress can be checked and cleared for use.

**Scenario 3.** Characteristics: local start, incident stays local, egress desired (by attendees and management), exits available, mass awareness.

A localized civil disturbance (e.g., firearms violence) provokes localized egress, which is seen by attendees, generally, who then decide to leave also.

**Scenario 4.** Characteristics: mass start, egress desired (by attendees), incident spreads, exits not available, mass awareness.

In an open-air facility unprotected from wind, precipitation, and lightning, sudden severe weather prompts egress to shelter but not from the facility. The means of egress congest and block quickly as people in front stop once they are under shelter, while people behind them continue to press forward, potentially resulting in a crowd crush.

These scenarios illustrate some of the broader factors to be taken into account when assessing the capability of both building systems and management features on which reliance is placed in a range of situations, not just fire emergencies. Some scenarios also illustrate the conflicting motivations of management and attendees based on differing perceptions of danger and differing knowledge of hazards, countermeasures, and capabilities. Mass egress might not be the most appropriate life safety strategy in some scenarios, such as Scenario 2.
Table A.13.4.1.3 summarizes the characteristics in the scenarios and provides a framework for developing other characteristics and scenarios that might be important for a particular facility, hazard, occupant type, event, or management.

Table A.13.4.1.3  Life Safety Evaluation Scenario Characteristics Matrix

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Local Awareness</th>
<th>Mass Awareness</th>
<th>Incidence Localized</th>
<th>Incidence Spreads</th>
<th>Egress Desired</th>
<th>Egress Not Desired</th>
<th>Management</th>
<th>Occupants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>X</td>
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<td>—</td>
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<td>—</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

A.13.4.2 Outdoor facilities are not accepted as inherently smoke-protected but must meet the requirements of smoke-protected assembly seating in order to use the special requirements for means of egress.

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[FR 1036: FileMaker]

A.13.4.2.1(1)(b) The engineering analysis should be part of the life safety evaluation required by 13.4.1.

A.13.4.5.12 Prior editions of the Code required stages to be protected by a Class III standpipe system in accordance with NFPA 14, Standard for the Installation of Standpipe and Hose Systems. NFPA 14 requires that Class II and Class III standpipes be automatic—not manual—because they are intended to be used by building occupants. Automatic standpipe systems are required to provide not less than 500 gpm (1890 L/min) at 100 psi (689 kN/m²). This requirement often can be met only if a fire pump is installed. Installation of a fire pump presents an unreasonable burden for the system supplying the two hose outlets at the side of the stage. The revised wording of 13.4.5.12 offers some relief by permitting the hose outlets to be in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

A.13.4.7 Where a special amusement building is installed inside another building, such as within an exhibit hall, the special amusement building requirements apply only to the special amusement building. For example, the smoke detectors required by 13.4.7.4 are not required to be connected to the building’s system. Where installed in an exhibit hall, such smoke detectors are also required to comply with the provisions applicable to an exhibit.

A.13.4.7.1 The aggregate horizontal projections of a multilevel play structure are indicative of the number of children who might be within the structure and at risk from a fire or similar emergency. The word “aggregate” is used in recognition of the fact that the platforms and tubes that make up the multilevel play structure run above each other at various levels. In calculating the area of the projections, it is important to account for all areas that might be expected to be occupied within, on top of, or beneath the components of the structure when the structure is used for its intended function.
A.13.4.7.2 See A.13.4.7.1.
A.13.4.7.7.2 Consideration should be given to the provision of directional exit marking on or adjacent to the floor.
A.13.4.10.2(2) Delayed-egress locks on doors from the airport loading walkway into the airport terminal building might compromise life safety due to the limited period of time the airport loading walkway will provide protection for emergency egress. The requirement of 13.4.10.2(2) would not limit the use of access-controlled or delayed-egress hardware from the airport terminal building into the airport loading walkway.

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[FR 1019: FileMaker]

A.13.7.2.4(5) NFPA 58, Liquefied Petroleum Gas Code, permits portable butane-fueled appliances in restaurants and in attended commercial food catering operations where fueled by not in excess of two 10 oz (0.3 L) LP-Gas capacity, nonrefillable butane containers that have a water capacity not exceeding 1.08 lb (0.5 kg) per container. The containers are required to be directly connected to the appliance, and manifolding of containers is not permitted. Storage of cylinders is also limited to 24 containers, with an additional 24 permitted where protected by a 2-hour fire resistance-rated barrier.

A.13.7.3(3)(a) Securely supported altar candles in churches that are well separated from any combustible material are permitted. On the other hand, lighted candles carried by children wearing cotton robes present a hazard too great to be permitted. There are many other situations of intermediate hazard where the authority having jurisdiction will have to exercise judgment.

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[FR 1021: FileMaker]

A.13.7.4.1 Fabric applied over unused seating sections should meet the requirements of 13.7.4.

A.13.7.4.3 The phrase “unprotected materials containing foamed plastic” is meant to include foamed plastic items covered by “thermally thin” combustible fabrics or paint. (See A.10.2.3.4.)

A.13.7.5.3.7.3(3) See A.13.4.1.1.

First Revision No. 508:NFPA 101-2012
[FR 1016: FileMaker]

A.13.7.6 The training program in crowd management should develop a clear appreciation of factors of space, energy, time, and information, as well as specific crowd management techniques, such as metering. Published guidelines on these factors and techniques are found in the SFPE Handbook of Fire Protection Engineering, Section 3, Chapter 13.

A.13.7.6.2 Crowd managers and crowd manager supervisors need to clearly understand the required duties and responsibilities specific to the venue’s emergency plan. The crowd management training program should include a clear appreciation of crowd dynamics factors including space, energy, time, and information, as well as specific crowd management techniques, such as metering. Training should involve specific actions necessary during normal and emergency operations, and include an assessment of people-handling capabilities of a space prior to its use, the identification of hazards, an evaluation of projected levels of occupancy, the adequacy of means of ingress and egress and identification of ingress and egress barriers, the processing procedures such as ticket collection, and the expected types of human behavior. Training should also involve the different types of emergency evacuations and, where required by the emergency plan, relocation and shelter-in-place operations, and the challenges associated with each.

A.13.7.7 It is important that an adequate number of competent attendants is on duty at all times when the assembly occupancy is occupied.
A.13.7.7.3 It is not the intent of this provision to require an announcement in bowling alleys, cocktail lounges, restaurants, or places of worship.